

















# MEDDELELSER OM GRØNLAND





# MEDDELELSER OM GRØNLAND

UDGIVNE AF

KOMMISSIONEN FOR  
LEDELSEN AF DE GEOLOGISKE OG GEOGRAFISKE  
UNDERSØGELSER I GRØNLAND

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BIND LIII

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MED 4 TAVLER



KØBENHAVN  
I KOMMISSION HOS C. A. REITZEL

BIANCO LUNOS BOGTRYKKERI

1917



## INDHOLD

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I.

FORELØBIGT BIDRAG TIL KAP FARVEL-  
DISTRIKTERNES KULTURHISTORIE,

PAA GRUNDLAG AF EN NYOPDAGET RUINGRUPPE I  
JULIANEHAAB-DISTRIKT

AF

KAJ BIRKET-SMITH



*Mindet om*

*BARCLAY RAUNKIÆR,*

*den kække Arabiens-Forsker, min Barndoms Legesfælle*

*og min Ungdoms Ven,*

*vies disse Blade.*



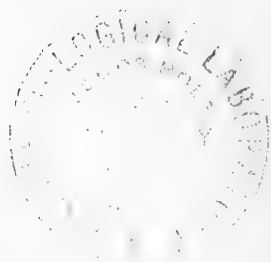


Fig. 1. Storisen, Kap Farvel-Distrikternes  
Livsbetingelse, ud for Arsuk-Fjord, Juni.  
(K. Stephensen fot.)

Som Deltager i den af cand. mag. K. STEPHENSEN ledede Ekspedition havde Forf. i Sommeren 1912 Lejlighed til at berejse Størstedelen af Grønlands to sydligste Distrikter og indsamle en Del Oplysninger af etnografisk Art. Da imidlertid Formaalet med vor Færd var en Undersøgelse af den marine Dyreverden i Kvannefjord og Bredefjord-Skovfjord-Farvandet, lod det etnografiske Arbejde sig ikke systematisk gennemføre, hvorfor Udbyttet paa mange

Maader bærer Præget af tilfældig og ufuldstændig Indsamling. Kun en enkelt Sag egner sig da paa nærværende Tidspunkt til at drages frem, nemlig Fundet af en hidtil ukendt Ruinplads, som paa en naturlig Maade kan danne Udgangspunktet for Omtale af visse ejendommelige Træk, der allerede nu synes at tegne sig — omend kun groft, saa dog altid ret tydeligt — i de paagældende Egnes kulturhistoriske Fysiognomi.

## I.

**Ruingruppen paa Tugtutûp-isua.**

Landet Nord for den store, aabne Julianehaab-Bugt er opløst i en mægtig Skærgaard, hvor Indlandsisens Mur mangt et Sted træder ud i Havet, og som fra SV. til NO. kløves af tre brede, fjordlignende Farvande: Sermitsialik, Bredefjord og Skovfjord. Som Hovedskellet mellem de to sidste hæver sig den langstrakte Ø Tugtutûq, de gamle Nordboers Langey, paa hvis Østside der findes en ansélig Indskæring, mod Nord begrænset af et lavt, for en Del af løse Sten og groft Sand opbygget Næs, »det renrige Lands Ende«, dets Isua (Fig. 2 og 3). Det



Fig. 2. Udsigt over Tugtutûp-isua.  
Kalvis fra Sermilik. De eskimoiske Ruiner ligger bag den nøgne Strandkant i  
Bunden af nærmeste Vig. (K. Stephensen fot.)

faststaaende Fjæld er stærkt forvitret, og adskillige Steder ud mod den aabne Fjord vidner tydeligt om, at Søen har nedbrudt og bortskyllet ikke ringe Partier. Plantedækket bestaar hovedsagelig af Fjældmark med Dværgbirk (*Betula glandulosa*) og Rævling (*Empetrum nigrum*).

Paa Indersiden af dette Næs, umiddelbart ved Vandet, og tildels i næsten uigennemtrængeligt Pilekrat fandt vi Ruinerne af den Samling eskimoiske Huse (Fig. 4), som her skal omtales nærmere<sup>1</sup>. Spredt

<sup>1</sup> Stedet er forøvrigt let kendeligt ved to Baaker, den ene i Strandkanten mellem Ruinerne, den anden paa Fjældet ovenfor.

imellem dem saas adskillige Bygningsrester fra Nordbotiden<sup>1</sup>; men vandt end Fundet herved øget Interesse, bidrog det just ikke til at lette Undersøgelsen, der alt i Forvejen — blottede, som vi var, for ethvert Graveredskab — var dømt til at blive yderst mangelfuld. Maalingerne, der dog ikke tør gøre Krav paa mere end ganske omtrentlig Nøjagtighed, gav de i Tabellen S. 7 anførte Resultater (m).



Fig. 3. Croquis over Isua; 1—12 eskimoiske Ruiner, a—h Grave, c<sub>1</sub> Stensætning til Kajak, Firkanterne nordiske Ruiner, Trekkanterne Baaker, rejste af S/S »Nordlyset«; ved ? findes muligvis Ruiner; Stedet blev ikke nærmere undersøgt.

Hertil maa der yderligere knyttes et Par Bemærkninger:

1) Et af de bedst bevarede Huse. Paa en jævn Strækning dækket af Rævling og Dværgbirk; Husmure, Siderum og Formure derimod skjulte af frodigt Pilekrat med mere end fingertykke Grene. Væggene ca. 1 m høje og meget tykke, utvivlsomt hovedsagelig paa Grund af

<sup>1</sup> Se STEPHENSEN, S. 90 o. f.



Sammenfald. Briksen ca. 25 cm over Gulvet. Siderummet er sikkert et Forraadskammer eller Kogested. Gangen peger paa denne, som paa samtlige andre Ruiner, imod Bugten.

2) Paa en svagt hældende Skraaning. Kun Bag- og Sidemure

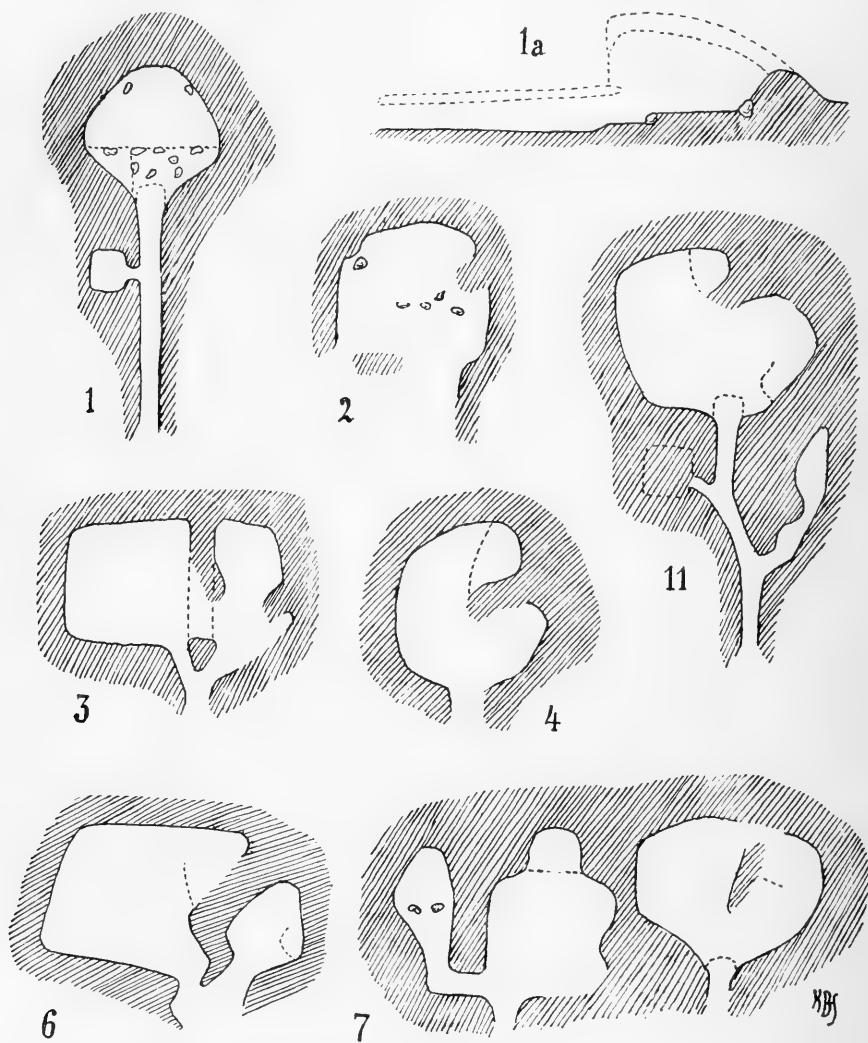


Fig. 4. Snit og Grundplaner af Ruiner paa Isua; ca. 6:1000. Tallene som paa Croquis'en Fig. 3.

tydelige. Den ene Væg dækket af Pilekrat, Resten overgroet med Rævling og Dværgbirk.

3) Næsten ganske udjævnet. Fjældmark.

4) og

5) ligeledes vanskelige at erkende.

Hus No	Indre Afstand fra Bagvæg til		Største indre Bredde	Husgangens Længde	Forraads- kammer
	Husgang	Briksens Rand			
1	3,2	1,7	2,9	5,8	$1 \times 1$
2	3	»	3,2	»	»
3	3	»	$3 + 1,7$	»	»
4	4	»	$2 + 1,5$	»	»
5	2,1	»	7,6	»	»
6	3	»	7,1	»	»
7	4	»	$1,3 + 3,5 + 5$	»	»
8	3	1,3	3,5	5,5	$1,5 \times 1$
9	2,9	1,9	2,2	»	»
10	3	»	3	»	»
11	3,7	»	5,6	6	»

6) Form som den foregaaende. Muligvis ligger der umiddelbart til venstre, set mod Vandet, to andre Ruiner, men kun en Udgravning vil kunne afgøre dette.

7) Bevokset med højt Græs, Tomten til venstre dog med Pil. Maalene derfor ganske omtrentlige.

8) Form som 1). Pilekrat. Muligvis til venstre sammenbygget med et andet Hus.

9) og

10) næsten udjævnede, dækkede med Pil. Form som 1) og 8), men nu uden Spor af Husgang.

11) Bevoksning af Græs. —

I nogen Afstand herfra ligger Resterne af en lav, nærmest kreds-rund Bygning (12) med et Tværmaal af ca. 1 *m*, antagelig en Kødgrav. I Omegnen findes en Del Rævefælder og desuden talrige Grave, der dog efter alt at dømme ikke nær kan maale sig med Ruinerne i Alder. Vi aabnede nogle af dem (*a—d* paa Kortskitsen). Efter senere Tidens Skik<sup>1</sup> var de døde her anbragte med sammenbøjede Ben (Fig. 5 og 6). Fra *a* og *b* medtoges Hovedskallerne og nogle Knogler, som nu opbevares i Universitetets normal-anatomiske Museum. I Følge en velvillig Udtalelse af Professor, Dr. med. FR. C. C. HANSEN, bærer alle umiskendelige Spor af europæisk Indblanding. Lidt borte fra *c* fandtes Resterne af en Stensætning (*c*<sub>1</sub>) til en gravgiven Kajak, af hvilken der endnu var nogle enkelte Træstumper tilbage. Der er intet i Vejen for, at den kan være lige saa ny som Gravene; ti den Tid er ikke ret fjærn, da man gav den døde sine Ejendele med. Endnu først i det 19. Aarhundrede var Størstedelen af Omegnens Be-

<sup>1</sup> DALAGER, S. 34. — CRANZ, S. 300.



Fig. 5. Det indre af en Enkelgrav (a),  
Isua.  
(K. Stephensen fot.)



Fig. 6. Det indre af en Fællesgrav (d),  
Isua.  
(K. Stephensen fot.)

folkning hedensk<sup>1</sup>, og umiddelbart uden for Julianehaab findes en gravgiven Kajak (Fig. 7), hvis Ejermands Navn og Historie endnu lever i Koloniens Befolkning; den er aabenbart kun et Par Slægtled gammel<sup>2</sup>.

Skal vi nu forsøge paa Grundlag af Grundplanerne at danne et Billede af Husene selv, vil det først være nødvendigt at kaste et Blik ud over de eskimoiske Boligformer i det hele taget. I den rige Mangfoldighed, Øjet da møder, vil det overalt — ved Bering-Stræde, paa Aleuterne og i det højnordiske Ørige — støde paa en ejendommelig ensartet Form: den runde Jordhytte, hvælvet over et Stel af Hvalknogler, »Hvalknoglehuset«, som den for Kortheds Skyld kan kaldes.



Fig. 7. Sammenfalden Stensætning med Rester af en gravgiven Kajak, ved Foden af en Klippevæg uden for Julianehaab. (K. Stephensen fot.)

En gammel, men udførlig og rammende Skildring af dette foreligger i GEORGE BEST's »True Discourse of the three Voyages . . . vnder the

<sup>1</sup> GIESECKE, S. 220.

<sup>2</sup> STEPHENSEN har S. 91 o. f. fortalt om de pudsige Omstændigheder ved Undersøgelsen af Ruinerne. Jeg falder da ogsaa for Fristelsen til her at optegne et lille Træk, der giver et Indblik i den — rigtignok oftest stærkt overdrevne — eskimoiske Naivitet. Vi Danske stod en Dag ved en aabnet Grav, da vore indfødte Hjælpere med ét kom til Stede. Det var lidt ubejlejligh, da Grønlændere som Regel ikke ynder, at man forstyrrer deres Forfædres Hvilesteder. Efter tavse at have iagttaget os i nogen Tid, faar en af dem imidlertid den lyse Tanke, at de, som laa her, jo var Hedninger og ikke komne i Himmelen! Hvorefter de alle tog fat og hjalp os med godt Humør.

conduct of MARTIN FROBISHER<sup>1</sup>. Den anføres her *in extenso*: Vi saá, siger han, nogle Bygninger, *»which serue them (as it should seeme) for their winter dwellings, and are made two fadome vnder grounde, in compasse round, like to an Ouen, being ioyned fast one by another, hauing holes like to a Foxe or Conny berry, to keepe and come togither. They vndertrenched these places with gutters so, that the water falling from the hilles about them, may slide away without their annoyance: and are seated commonly in the foote of a hill, to shield them better from the cold windes, hauing their doore and entrance euer open towards the South. From the ground vpward they builde with whales bones, for lacke of timber, which bending one ouer another, are handsomely compacted in the top together, and are couered ouer with Seales skinnnes, which in stead of tiles, fence them from the raine. In which house they haue only one roome, hauing the one halfe of the floure raised with broad stones a foot higher than y<sup>e</sup> other, whereon strawing Mosse, they make their nests to sleep in«*<sup>1</sup>.

Denne Slags Boliger kendes fra flere Steder paa den grønlandske Kyst. Ruiner af dem er fundne i Kap York-Distrikt<sup>2</sup>. Fra Vestkysten omtaler og affbilder som bekendt allerede OLAUS MAGNUS *»habitationes humanæ, quasi euerfæ carinæ. Et meritò: quia ex costis cetorum, velut grandibus lignis, incolæ conficiunt ædes, musco, & fructibus pro niuibus, ac imbribus arcendis sollicitè contegentes«*<sup>3</sup>, og endnu i det 17. Aarhundrede blev saadanne sete i Brug omtrent ved det nuværende Holstensborg. JOHN HALL omtaler saaledes fra sin anden Rejse (1606) en Samling Huse, *»which were builded with Whales bones, the balkes being of Whale ribbes, and the tops were couered with earth«*<sup>4</sup>. Omtrent et halvt Aarhundred senere traf DANELL i samme Egn »nogle af deris huse, som de hafde forlat och stöod öde, och var grafuen noget i jorden och var sidenn lagt ribber af hualfische och nogenn træer och var hule som eenn stoer bageroufn och var rundachtig, och der laa jord och sadder offuer, huormed de ware tagt«<sup>5</sup>. Skulde ikke ogsaa de Ruiner, som Pastor FREDERIKSEN har fundet ved Holstensborg i 1911<sup>6</sup> stamme fra saadanne? I Myter og Sagn levede Mindet om de ældre Boliger videre; disse har vel staaet POUL EGEDE's Hjemmelsmand<sup>7</sup> for Øje ved Ytringen: »Maanen boer udi et lidet Huus med et Vindue paa, har 2de Lamper, som brænder for hans Seng . . .«<sup>7</sup>. Men i Virkeligheden blev Fælleshuset eneraadende. Endnu FEYKES HAAN omtaler ganske vist i 1720 Brugen af Hvalknogler »i Mangel af

<sup>1</sup> HAKLUYT, S. 96. — FROBISHER, S. 137 o. f.

<sup>2</sup> RASMUSSEN: Nye Menn., S. 85. — NARES, S. 187 o. f.

<sup>3</sup> MAGNUS, S. 69.

<sup>4</sup> PURCHAS, S. 825.

<sup>5</sup> LUND, S. 212.

<sup>6</sup> FREDERIKSEN, S. 391 o. f.

<sup>7</sup> P. EGEDE, S. 78.



Træ, hvad der ofte forekommer<sup>1</sup>, men efter Sammenhængen synes det nærmest, som Talen er om en Nødhjælp ved Opførelsen af Fællesboligen og ikke om egentlige »Hvalknoglehuse«. Antagelig har paa samme Maade de paa Nordøstkysten fundne Huse, hvortil Hvalknogler var anvendte<sup>2</sup>, været af den dér sædvanlige, sent opstaaede Type (se S. 34).

Hvalknoglehuset er af meget stor Interesse, dels fordi det lader sig bringe i nøje Forbindelse med en stor Gruppe andre nordamerikanske Boliger, dels fordi det øjensynligt er den Stamform, hvorfra alle andre eskimoiske Jordhuse, direkte eller indirekte, er udgaaede, simpelthen ved at man i større eller mindre Grad har erstattet Knoglestøtterne med Træværk, Sten o. a. I Modsætning til de talrige afledede Former i det vesteskimoiske Omraade, finder man kun faa Østen for Mackenzie River; i de højarktiske Egne, hvor hver opskyllet Træstump har Værdi, bruges nemlig Snehytten de fleste Steder hele Vinteren igennem, mens den oprindelig nærmest kun anvendtes under Rejser og Fangst i Foraarstiden<sup>3</sup>. I Grønland stiller Forholdene sig dog anderledes, idet man her kender i det mindste tre Døtreformer. Længst mod Nord har Polarstammen udviklet sin ejendommelige »Kløverbladstype«, hvor Forstærkninger i selve Muren er traadte i Stedet for Knoglerne<sup>4</sup>. Fra nu ubeboede Steder i Melville-Bugt<sup>5</sup> og om til Nūalik paa Østkysten, op mod 2° Nord for Angmagssalik<sup>6</sup>, har man fundet det almenkendte Fælleshus, og endelig har en endnu yngre, af Fælleshuset opstaaet, firkantet Form haft hjemme paa den nordligere Østkyst<sup>7</sup>.

Hermed er da de fire Hovedarter af det grønlandske Jordhus omtalte, og Spørgsmaalet bliver nu, hvorledes Ruinerne paa Isua stiller sig til disse. N<sup>os</sup> 1), 8), 9) og 10) kan ved et flygtigt Øjekast minde en Del om »Kløverbladshusene«; men ret besete viser det sig, at af disses vigtigste Kendetegn, de forstærkede Sidemure, er der ikke Spor, og Rummet til Sidebriksene har derfor heller ikke det nisjeagtige Udseende som i Polargrønlændernes Huse. Selv om man tager i Betragtning, at der ingen Udgravning har fundet Sted, bliver dette Træk paafaldende, fordi det findes ved alle fire Ruiner. Det kan da kun antages, at man staar over for Hvalknoglehuse. Det afvigende Hus 4) og Tomten længst tilvenstre i 7), set mod Vandet, er øjensynligt af samme Grundform, men delt ved en Væg i to Rum; de bringer for saa vidt Boligerne paa Southampton Island<sup>8</sup> i Erindring.

Ligesom de to sidstnævnte synes de øvrige Ruiner delte ved en

<sup>1</sup> HAAN, S. 77; jf. 75.

<sup>2</sup> RYDER: Esk. Bebygg., S. 289. — Muligvis THOSTRUP, S. 223, 278.

<sup>3</sup> STEENSBY: Eskimokult. Opr., S. 191.

<sup>4</sup> STEENSBY: Pol. Esk., S. 315.

<sup>5</sup> RYDER: Grønl. Vestk., S. 254.

<sup>6</sup> ANDRUP, S. 303.

<sup>7</sup> Smst., S. 319 o. f. — RYDER: Esk. Bebygg., S. 296 o. f. — THOSTRUP, S. 279.

<sup>8</sup> BOAS, S. 400.

indre Mur; men de har desuden en ejendommelig, firkantet Grundplan, som man har vanskeligt ved at forene med Tanken om Hvalknoglestøtter. Jord og Sten alene kan ikke have været anvendt; det maa derfor antages, at der har været benyttet Tømmer til Tagværket. Et helt nyt Stof er saaledes taget i Brug, og Ruinerne peger derved i Retning af de nyere Tidens Fælleshuse. Dette er i social Henseende kun en videre Udvikling af et gammelt Princip, idet Boligen er bragt til at rumme flere end de oprindelige Huses to eller tre Familjer. Teknisk set betyder det for det første, som STEENSBY tydeligt har vist<sup>1</sup>, at en Række jævnsides liggende Huse er byggede sammen til ét, og for det andet en udstrakt Anvendelse af Tømmer, og dette er Kærnepunktet; ti det er et fuldstændigt Brud med gammelt Byggesæt, da Træ kræver en ganske anden Konstruktion end Hvalknogler. Naar derfor STEENSBY anser Eskimoernes velkendte Tilbøjelighed til Sømmenslutning i Forbindelse med Adgang til rigeligt Drivtømmer for at have givet Stødet til Fælleshusets Opstaaen, har han vel paa en Maade Ret, men næppe uden videre. Som Aleuterne ved deres over 75 *m* lange Bygninger har vist, er Tømmer i og for sig ingen Betingelse for arktiske Størhuse. Man kunde da mene, at det var en Spore, som vakte den slumrende Trang til Live; men ogsaa dette falder til Jorden. Træet maa tværtimod i Begyndelsen have ligget tungt og akavet i Eskimoens Haand, som gennem Slægtleds Tradition var vant til at sysle med Hvalkæber og Ribben. Derfor synes det, som om der bag Fælleshusets Opstaaen ligger noget mere end en vag Disposition, der vel vil kunne forklare Boligens Karakter, men ikke Overgangen til det nye Materiale.

Det er en Kendsgærning, at hævdfastnet Sæd intetsteds spiller den Rolle som hos Naturfolkene; der skal saare stærke Magter til for at bryde dens Tryllering. De har med primitiv Ensidighed kastet sig over et enkelt Stof og naar i Forarbejdelsen af dette ofte det ypperlige; men kun tøvende og nødtvunget vender de sig mod et nyt, hvis de derved maa ændre deres Arbejdsmaade. Utvivlsomt har da Eskimoerne saa længe som muligt hængt ved deres fra Fædrene »nedarvede« Hvalknoglehuse, og saalænge de holdt sig nordpaa gik alt vel. Just i det sydlige Grønland maa imidlertid Mangelen paa store Hvaler blive følelig. Pukkelhvalen (*Megaptera boops*) er den eneste, der forekommer regelmæssigt; men den er dog ikke almindelig, og Fangsten indskrænkes yderligere ved, at den maa langes i sovende Tilstand, fordi den efter Finfiskenes Skik søger at undslippe i Overfladen, naar den harpuneres, i Stedet for at gaa til Bunds som Sletbagene. Gennemsnitlig dræbes der kun 2—3 Stykker om Aaret<sup>2</sup>. Kaskelot (*Physeter macrocephalus*), Rørhval (*Balænoptera musculus*), Vaagehval (*B. rostrata*) og Blaahval (*B. Sibbaldii*) forekommer kun yderst sjældent.

<sup>1</sup> STEENSBY: Pol. Esk., S. 324.

<sup>2</sup> RINK: Grønl., S. 210.

som Drivaadsler, men fanges ikke, og Grønlandshvalen (*Balaena mysticetus*) gaar overhovedet ikke sydligere i Davis-Stræde end 65° n. Br. Man er da utvivlsomt tvunget til at se sig om efter nyt Byggestof og har derfor naturligt taget sin Tilflugt til Drivtømmeret.

Der findes imidlertid i Fælleshusets Konstruktion Træk, som vanskeligt uden videre kan tilskrives det ændrede Materiale, men som muligvis er optagne udefra eller med andre Ord fra Middelalderens nordiske Nybyggere. Naar MAUSS<sup>1</sup> og vistnok ogsaa THALBITZER<sup>2</sup> mener, at overhovedet det meste af Huskonstruktionen er optaget fra disse, er de uden Tvivl gaaet for vidt. Der kan højst være Tale om ganske enkelte Træk. Maaske skal allerede den firkantede Grundplan regnes til disse. Fremmed Indflydelse synes i hvert Fald med noget større Sandsynlighed at kunne spores i Tagværket, betegnende nok den Del af Bygningen, hvor det ny, uvante Materiale fører de største Ændringer med sig, og som man derfor snarest maatte staa famlende overfor. Fælleshusets Tag er saddelformet og hviler paa en af en Række Stolper baaren Aashjælke, en ret uestimoisk Form, der ganske vist har noget tilsvarende i Alaska, hvor den dog antagelig er kommen fra de tømmerkyndige Tlingiter. Hos Nordboerne var denne Form derimod almindelig i hele Sagatiden<sup>3</sup>. I hele sit Anlæg og sin Indretning forblev Fælleshuset, til trods for denne mulige, fremmede Paavirkning, en ægte Frugt af den Hjælpsomhedens og Samglædens Aand, der er et af de mest hjærtevindende Træk af eskimoisk Sjæleliv.

Der synes derfor Grund til at antage, at Fælleshuset opstod i Syd-Grønland mod Middelalderens Slutning og senere bredte sig mod Nord. Men hvad er da Grunden til, at Nordlænderne har opgivet deres Hvalknoglehuse? Man kan ikke undgaa at bemærke, at de sidste af disse er iagttagne netop i det Hundredaar, hvor den hensynsløse Rovdrift efter Hvaler i det nordlige Davis-Stræde tog Fart og forkludrede Naturens — og Naturfolkenes — økonomiske Ligevægt. Hermed synes da Svaret givet.

## II.

### Ruinerne og den ældre Kap Farvel-Kultur.

Eskimokulturen røber, som STEENSBY har vist<sup>4</sup>, sin arktiske Oprindelse ved, at flere af dens Særtræk er gaaet tabt, hvor den har bredt sig ned i subarktiske Egne. Dette gælder Hundeslæden, Snehytten og de forskellige Former for Sælfangst fra Isen.

<sup>1</sup> MAUSS, S. 70 Fodnote 2.

<sup>2</sup> THALBITZER: Ethnogr. Coll., S. 363.

<sup>3</sup> Guðmundsson, S. 116.

<sup>4</sup> STEENSBY: Eskimokult. Opr., S. 145.

Man har nu antaget<sup>1</sup>, at Eskimoerne under deres Fremtrængen langs Grønlands Vestkyst en Tid lang er stoppede op ved Disko-Bugt og dér har omformet deres Kultur efter de nu indtrædende mildere Forhold, for de bredte sig videre mod Syd. Herfor kunde tale, at mens der i Ūmánaq-Bugt og det indre af Disko-Bugt findes udpræget arktiske Naturforhold, staar man ved Mundingen af sidstnævnte saa at sige med ét Slag over for Livsvilkaar af et mildere Præg. Saavel her som i de umiddelbart sydfør liggende Distrikter Egedesminde og Holstensborg spiller derfor Hundeslæden kun en ringe Rolle, mens til Gengæld Kajakfangsten staar højt. Desuden har man fra nyere Tid Prøver paa Disko-Bugts kulturavlende Ævner, idet moderne Redskaber som Kajakskydesejl og Kajakror aabenbart har deres Hjemsted dér<sup>2</sup>.

Nu er det imidlertid indlysende, at en Husform som Hvalknoglehuset maa være af arktisk Herkomst, fremavlet, hvór Træ i tilstrækkelig Mængde ikke kunde bringes til Veje, og vi saá, hvorledes den har været til Stede praktisk talt helt nede ved Kap Farvel. Dette maa da spore til en Undersøgelse af, hvorvidt der lader sig paavise andre arktiske Træk i denne Egns Kultur.

Først kan det da nævnes, at Ruinpladsens Beliggenhed, langt fra det aabne Davis-Stræde, minder om de nordlige Bopladsers, men ikke er almindelig sydpaa, hvor Bebyggelsen væsenligst er knyttet til Fjordmundinger eller til Skærgaarde og Sunde, 3: Steder, til hvilke Storisen med sine Skarer af Klapmyds (*Cystophora cristata*) har let Adgang, eller hvor Sortsiden (*Phoca groenlandica*) trækker forbi ved Forsommer- og Efteraarstide. Dog maa det udtrykkelig bemærkes, at netop i Nærheden af Isua findes ogsaa i Nutiden et Par beboede Steder, Narssaq, Tugdlarúnat og Niaqornaq, hvis Beboere for en Del lever af Ringsælfangst i den inden for Bredefjord liggende Isfjord (Nordre-Sermilik).

Kødgrave siger i sig selv intet. De bruges ganske vist nu meget lidt i Kap Farvel-Distrikterne; Forraad gemmes simpelthen i en Klippespalte og dækkes med gamle Baadskind, idet de nuværende, sydgrønlandske Hunde, der er af evropæisk Afstamning, baade er for faatallige og for lidet glubske til, at man for deres Skyld skulde træffe videregaaende Foranstaltninger. Derimod nævnes de af CRANZ<sup>3</sup>, paa hvis Tid man sydpaa havde Hunde af eskimoisk Race. Men dette fører videre. Naar det nemlig erindres, at Hunden sydpaa praktisk talt var unødvendig — kun fattige bar Pelse af dens Skind<sup>4</sup> — spørger man uvilkaarligt, om dens Tilstedeværelse da ikke betyder, at den engang i Fortiden har været til Nytte, eller med andre Ord om man

<sup>1</sup> Smst., S. 70. — Jf. SOLBERG, S. 91 o. f.

<sup>2</sup> STEENSBY: Rejsest., S. 150 o. f.

<sup>3</sup> CRANZ, S. 188.

<sup>4</sup> DALAGER, S. 43.

ikke har kendt Hundeslæden, der, saa langt tilbage vort direkte Kundskab naar, ikke har været brugt Syd for Holstensborg<sup>1</sup>.

Svaret gives af nogle Fund, der nu opbevares i Nationalmuseets etnografiske Samling. Ved gamle Grave paa Øen Akia over for Kolonien Julianehaab er der optaget to Skaglespænder (Fig. 8), det ene (L 6744) paa det østlige Næs, Isua, det andet (L 6700) i den vestlige Del af Øen, tæt ved Boplassen Kangermiutsiait. En Forveksling med lignende Spænder til dobbelte Slæberemme, Halvpelse e. l. er udelukket paa Grund af Stykkernes og Hullernes Størrelse. I Nord-Grønland træffes denne Form i Gravfund, men den er senere vejet for en oval Type<sup>2</sup>; fra Østkysten er den ligeledes velkendt<sup>3</sup>.

End mere talende er dog en lille, 15 cm lang og 4 cm bred Slædemodel af Træ (A 303—5,



Fig. 8. Skaglespænder, fundne ved Grave paa Akia, *a* Kangermiutsiait, *b* Isua; 1:1. (Nationalmuseet).



Fig. 9. Gravfunden Slædemodel, Ikigait; 1:2. (Nationalmuseet).

Fig. 9), fra en Grav ved Ikigait (Østprøven). Den bærer en 7 cm høj, raat udskaaen Dukke. Af Forspandet findes en enkelt Hund, som har

<sup>1</sup> For Fuldstændigheds Skyld skal det nævnes, at LA PEYRÈRE i Forbindelse med FROBISHER'S Besøg i Syd-Grønland 1578 giver et Rids af Eskimoernes Kultur, hvor han nævner Hundeslæden (S. 148). Dette betyder dog intet, da denne Skildring ganske øjensynligt er given paa Grundlag af FROBISHER'S Omtale af Befolkningen paa Baffin-Land.

<sup>2</sup> Eksemplarer i Nationalmuseet, Kbh.

<sup>3</sup> RYDER: Esk. Bebygg., S. 306. — THALBITZER: Amdrup Coll., S. 489. — THALBITZER: Ethnogr. Coll., S. 374.

haft særligt indsatte Ben, Øren og Hale. Slædens forholdsvis betydelige Længde i Sammenligning med Bredden tillige med de ikke opadbøjede Meder henfører den til en ældre Type, der er forskellig fra den nuværende nord- og østgrønlandske, men som minder saavel om Polargrønlændernes<sup>1</sup> som derigennem om Aivilikernes<sup>2</sup> Slædeform. Opstandere findes ikke; men de har utvivlsomt engang været til Stede, da man overhovedet ikke hidtil er truffet paa Typen uden Opstandere i Grønland. THALBITZER mener ganske vist<sup>3</sup>, at den Slædemodel, AMDRUP fandt paa Skærgaardshalvø paa Østkysten (68° n.Br.), har været af denne Form, der f. Eks. findes ved Netjilik<sup>4</sup> og Iglulik<sup>5</sup>, i Labrador<sup>6</sup> o. a. St.; men skønt Modellen fjærner sig stærkt fra de moderne, østgrønlandske Slæder, slutter den sig saa nøje til det her omtalte Stykke fra Ikigait, at der næppe er tilstrækkelig Støtte for hans Antagelse. Paa den af »Germania«-Ekspeditionen fundne Slæde, der nu opbevares i *Museum für Völkerkunde* i Berlin, synes de Træstykker, der er anbragte som et Par Opstandere, snarest at svare til de Skraastiveré, der forbinder Mederne med det forreste Tværtræ paa Polargrønlændernes Slæde; men ogsaa den har antagelig engang haft Opstandere. Det er jo naturligt, at det er disse, det i Tidens Løb først gaar ud over.

Efter de omtalte, af hverandre ganske uafhængige Fund, hvis Værd yderligere stiger, fordi der aldrig er foretaget systematiske Undersøgelser i Kap Farvel-Distrikterne, kan Hundeslædens tidligere Forekomst i disse Egne uden Tvivl betragtes som en Kendsgærning. Det falder da ganske i Traad hermed, at der i Erhvervslivet endnu den Dag i Dag gør sig et mere arktisk Præg gældende, end det undertiden antages.

Den alt overvejende Erhvervsmetode er selvfølgelig Kajakfangsten, som kan drives praktisk talt Aaret rundt, selv om Storme og Isfod ved Strandklipperne ofte for nogen Tid kan lægge Hindringer i Vejen om Vinteren. Man fanger med Riffel og Harpun (med denne navnlig i Taage og urolig Sø, naar man kan komme Dyret nær ind paa Livet) samt i Julianehaab-Distrikt ved Fællesjagt med Blærespyd, som især i dets sydligere Del hører til enhver vel udrustet Kajak.

Ved Siden af Kajakfangsten er Isfangst dog ingenlunde ukendt, og det er den, der som ægte arktisk her er af Interesse. Det er kun sjældent, at der i Kap Farvel-Distrikterne er varig Vinteris ud over det inderste af Fjordene, som mest ligger fjærnt fra de nuværende

<sup>1</sup> MYLIUS-ERICHSEN & MOLTKE, Fig. S. 166.

<sup>2</sup> PARRY, S. 515. — HALL, Fig. S. 85, 221.

<sup>3</sup> THALBITZER: Amstrup Coll., S. 393 o. f.

<sup>4</sup> AMUNDSEN, Fig. S. 264.

<sup>5</sup> LYON, Tavle ved S. 111.

<sup>6</sup> Eksemplarer i Nationalmuseet, Kbh., og *Museum für Völkerkunde* (Grassimuseum), Leipzig.

Bopladser. Dog er et mindre Farvand som Qaqortoq-Fjord, der ved den i al sin Simpelhed saa ærværdige Kirkeruin har vundet uforglemmeligt Ry, tillagt hver Vinter (hvorimod Föhnvinde tit holder den nærliggende Igaliko-Fjord aaben). Tunugdliarfik og Julianehaabs nordre Sermilik er undertiden isdækkede, og selv i Arsuk-Fjord kan Munden fryse til, saa at man kan færdes paa Isen mellem Ivigtût og Arsuk. Naar saadanne Lejligheder tilbyder sig, øver Grønlænderne endnu engang imellem den oprindelige, efter fast Is afpassede Fangst; men visse Former drives desuden aarligt, idet de er læmpede efter Drivisen, der spiller en saa umaadelig stor Rolle, at den uden Overdrivelse kan betegnes som en Livsbetingelse.

Kun sjældent finder den egentlige *ūtorniarneq* Sted, for saa vidt som *ūtoq*, et sydpaa ukendt Ord, oftest betyder en Sæl, der soler sig paa fast Is. Ukendt er Jagtmetoden dog ikke. Den bruges hver Vinter fra December til April, naar Sælerne kravler op paa Drivisen, hvoraf Havet da er opfyldt. Sælen kaldes da *qagssimasog*, Metoden *qagssimasorniarneq*, men i øvrigt er der ingen Forskel fra *ūtoq*-Fangsten. De herved anvendte Skydesejl paa Meder er yderst almindelige rundt om paa Bopladserne. Da Klapmyds og Sortside paa denne Tid næsten alle er trukne bort og Spættet Sæl (*Phoca vitulina*) i det hele er ret sjælden, gælder Fangsten fortrinsvis Ringsæl (*Ph. foetida*) og Remmesæl (*Erignathus barbatus*).

Fangst ved Blæsehullerne, *máuneg* og *nigparneg*, falder i Syd-Grønland »hist og her i det indre af Fjorden«<sup>1</sup>, og i Nutiden er den i Julianehaab-Distrikt anvendt i Nordre-Sermilik<sup>2</sup>. Heller ikke de særlige Isharpuner manglede forud i Syd-Grønland, om end de var sjældne<sup>3</sup>. Forøvrigt er Ordet *máupog*, ligesom *ūtoq*, ukendt i hvert Fald for det yngre Slægtled. En Hentydning til Fangstmaaden ligger vistnok i Navnet Agdluitsoq (Lichtenau-Fjord) o: »hvor der er Blæsehuller i Isen«.

Den omdannede *máuneg*, Tomandsfangsten *itsuarneq*, er ukendt, hvilket for saa vidt kun er at vente, som den ogsaa i Nord-Grønland forlængst er gaaet af Brug. Derimod haves der fra nyere Tid et Eksempel fra Julianehaabs Omegn paa Glatisfangst, *quasasiorneq*<sup>4</sup>; da denne Metode vel er den, der stiller de største Krav i Retning af specielle Forhold, er det dobbelt interessant at finde den bevaret.

Fangst fra Isranden ved Vaager eller Strømsteder, *sinâliarneq*, er ligesom *ūtorniarneq* omdannet efter Forholdene. Naar Storisen med sit utallige Følge af Klapmyds i Sommertiden ligger som en uigennemtrængelig Skranke ude i Julianehaab-Bugt, er det almindeligt at gaa ud i Kajak og skyde Sælen fra Randen af Skodserne. I Distriktets sydlige Del, hvor der er mest Is, ser man ofte bag paa Kajakken et

<sup>1</sup> RINK: Grønl., S. 199.

<sup>2</sup> BRUUN, 205.

<sup>3</sup> FABRICIUS: Fange-Redsk. ved Sælh.-Fangst, S. 146.

<sup>4</sup> MÜLLER, S. 192.

lille Træstativ, tre Ben forenede med en Tværpind, paa hvilken man hviler Riffelen, mens man ligger paa Isflagen.

Snehuset mangler i hele Grønland uden for Kap York-Distrikt og hos de asiatiske Eskimoer, hvilket hænger sammen med, at det i sin oprindelige Egenskab af Rejsebolig forudsætter lange Afstande mellem Fangststedet og Bopladsen, som de her kun sjældent findes<sup>1</sup>. Nogen Betingelse for arktisk Kultur er det derfor ikke, og man er selvfølgelig udelukket fra at paavise det ad arkæologisk Vej.

Det er paavist, at den arktiske Kulturs vigtigste Kendetegn: Hvalknoglehus, Hundeslæde, *ūtorniarneq*, *máuneq*, *quasasiorneq* og



Fig. 10. Lodder til Tørring paa Fangstpladsen, Egoaluit-imaq.

Ved den forreste Hytte et Stangnet.

(K. Stephensen fot.)

*sináliarneq* endnu er eller har været til Stede i Kap Farvel-Distrikterne, og man kan vistnok saaledes fastslaa, at der forud for den nuværende, subarktiske Kulturperiode i Kap Farvel-Distrikterne er gaaet et Tidsrum, hvor Kulturen havde et arktisk Præg.

Hermed skal selvfølgelig ikke være sagt, at Vejrliget tidligere har været koldere. Den Virtuositet, hvormed man undertiden jonglerer med omfattende Klimatændringer i Løbet af faa Hundrede Aar, er i Sandhed forbavsende — men nægtes kan det jo heller ikke, at som Forklaring paa en Kendsgærning er en saadan Ændring vel egnet til at dække over, at man i Virkeligheden staar uforstaaende. Naturligvis

<sup>1</sup> STEENSBY: Eskimokult. Opr. S. 144.



er heller ikke Grønland gaaet fri. I Nordbotiden skal dets Vejrlig have været ganske anderledes mildt end det, vi Stakler nu er udsatte for, og skønt allerede EGGERS har henvist til<sup>1</sup>, at »Kongespejlets Skildring kun passer paa Naturforhold som de nuværende, er det ikke lykkedes at faa rammet en tilstrækkelig svær Pæl gennem Genfærdet, der endnu dukker op Gang paa Gang. Nu er det jo her vist, hvorledes en Række Træk peger mod et koldere Klima. Er det da ikke indlysende, at det har været — ganske som i vore Dage!

Vi har da forenet et subarktisk Klima med en arktisk Kultur, to Ting, der tilsyneladende strider mod hinanden. Dog ogsaa kun til-



Fig. 11. Fangstthytte paa Loddepladsen, Egluit-imaq.

En Kone er i Færd med at strække en Stovle; ved Siden af hende Ildstedet bag en »Vindskærm«, paa den anden Side nogle Børn i Døraabningen.

(K. Stephensen fot.)

syneladende! Hvad Hvalknoglehuset angaar, maa det erindres, at man har opgivet det af Grunde, som ikke direkte har Forbindelse med Vejrliget. Nu er det subarktiske Klima jo ikke væsensforskelligt fra det arktiske, men kun en Afskygning, der nærmer sig det middelvarme; det forener, som man træffende har sagt, dettes Ustadsighed med hints lave Temperatur. Tilmed findes det — og dette er af Vigtighed — kun udpræget ved Yderkysterne, mens det i de indre Dele af Fjordene er betydelig mere fastlandsagtigt, saa at det dér oftere falder ind med længere Tidsrum af stadigt Vejr. Har Beboerne oprindeligt, som den fundne Ruinplads kan tyde paa, efter nordgrøn-

<sup>1</sup> ARCTANDER, S. 1223, Fodnote.

landsk Skik holdt sig til Fjordenes Indre, har de sandsynligvis selv under saa sydlige Bredder kunnet føre et arktisk præget Liv. Efterhaanden maa imidlertid den rige Fangst paa Klapmyds og Sortside have trukket dem ud i Skærgaarden, og da nu Lodden (*Mallotus arcticus*), der om Forsommeren i tallose Stimer søger ind til Kysten (Fig. 10 og 11), i tørret Tilstand yder et fortrinligt Vinterforraad, har

man været i Stand til at vende Fjordene Ryggen for stedse og dermed opgive den forhen uundværlige Vinterfangst. Erhvervet fik hermed et andet, subarktisk Præg, og Anvendelse af Hundeslæde og Isfangstmetoder sygnede efterhaanden hen og forsvandt omsider næsten ganske som nu unødvendige Dele af Kulturlegemet.



Fig.12. Ung Pige, Narssaq. Yderstøvlerne naaer til Knæet; Inderstøvlens øverste Rand dækket af et Stykke udsyet Linned. (K. Stephensen fot.)

### III.

#### Kap Farvel-Kulturens Stilling og Udvikling.

Vi har paavist den ældre Kulturs arktiske Præg, men kan ikke standse herved. I Lyset heraf gror der nemlig to nye Spørgsmaal frem: hvilken Betydning har denne Paavisning for Opfattelsen af Kap Farvel-Distrikternes Stilling in-

den for det grønlandske Kulturrige? Og hvilken for disse Egnes egen Kulturhistorie? Bæge kræver deres Løsning.

Grønlands Kultur udgør nu til Dags en Enhed. De høje, ret snævre Kvindestøvler med de tilsvarende korte Benklæder (Fig. 12), det ejendommelige Telt (Fig. 13), den firkantede Tørrehække, den tvearmede Kvindekniiv, for blot at nævne nogle Eksempler, er til Stede i hele Grønland, men ukendte andetsteds. Der er Grund til udtrykkeligt at betone dette, eftersom en fremragende Forsker som

Boas<sup>1</sup> henregner Polargrønlanderne til den centraleskimoiske Gruppe uden at erindre, at de forenende Træk enten er ældre, fælles østeskimoiske eller ogsaa, saaledes som Kajakken, er komne med den af de fremmede Hvalfangere bevirkede Indvandring fra Baffin-Land i Midten af forrige Aarhundrede, altsaa paa ganske ekstraordinær Maade, vidt forskellig fra den paa regelmæssigt Samkvem hvilende Kulturudveksling, der maa antages at ligge til Grund for Grønlands Enhed<sup>2</sup>.

Der lader sig inden for denne atter sondre mellem tre Grupper, hver med sine Ejendommeligheder: Kap York-Distrikt, den koloniserede Vestkyst og Angmagssalik-Distrikt med den sydlige Østkyst. Kap Farvel-Området tilhører vel den anden af disse, men danner i geografisk Henseende Overgangen til den tredje. Spørgsmaalet om dets etnografiske Stilling bliver da, nærmere bestemt, Spørgsmaalet om dets Forhold til den øvrige Vestkyst og til Østkysten. Denne Sag har som bekendt allerede tidligere sysselsat Provst SCHULTZ-LORENTZEN, der i en højst lærerig og tankevækkende Afhandling<sup>3</sup> har hævdet, dels at dets Befolkning er nærmest beslægtet med Østkystens, dels at den herfra er indvandret til sit nuværende Hjem.

Som Støtte for det første Punkt fremføres en Række Omstændigheder af kulturel og sproglig Art. Det er ikke Meningen her at underkaste hver eneste af disse en Prøve; men det vil dog være nødvendigt at ledsage de fleste med nogle Bemærkninger.

Naar det saaledes fremhæves, at man sydpaa ligesom paa Østkysten anvender Sammenfalsning af de enkelte Dele i Fartøjernes Træstel, mens der paa den nordligere Vestkyst bruges Surring, da er



Fig. 13. Skindtelt af sædvanlig grønlandsk Type, Sydproven. (Forf. fot.)

<sup>1</sup> Boas, S. 568.

<sup>2</sup> Ganske vist synes Forbindelsen mellem Polar- og Nordgrønlanderne afbrudt ved Kolonisationens Begyndelse, men bægge Parter kendte hinanden og mødtes undertiden paa Isen i Melville-Bugt.

<sup>3</sup> SCHULTZ-LORENTZEN, S. 291 o. f.

dette vel i Hovedsagen rigtigt; men Kendsgærningens Værd svækkes i ikke ringe Grad derved, at Falsning ganske øjensynligt hører den



Fig. 14. Gammel Kone ved at skrabe et Sælskind, det første Led af Beredningen. I Haanden holder hun en Kvindekniv. Loddepladsen ved Egoaluit-imaq. (K. Stephensen fot.)

nyere Tid til og næppe engang er trængt fuldstændigt igennem i Kap Farvel-Distrikterne. Det anføres endvidere, at der som østpaa til Fartøjer og Fangstblære udelukkende benyttes lyse, o: narvfrie Skind<sup>1</sup>, og dette gælder vistnok ogsaa fuldt ud for Fangstblærens og i hvert Fald for langt de fleste Konebaades Vedkommende (Fig. 15). Blandt Kajakkerne ses rigtignok lige saa mange mørke som lyse (Fig. 16); men maa-ske kan dette tildels skyldes den af Skindmangelen forårsagede Udveksling af Baadskind langs Kysten<sup>2</sup>. Af Vigtighed er det imidlertid at mærke sig, at Anvendelsen af lyse Skind ikke er indskrænket til Kap Farvel-Distrikterne; Grænsen ligger først ved Sukkertoppen; ti det hedder udtrykkeligt, at »de fleste Grønlændere ved Godt-

haab og deromkring samt længere Syd efter overtrække deres Baade med hvidt Skind, hvoraf Haarremmen er med Fliid aftagen»<sup>3</sup>,

<sup>1</sup> Hvis Skindet, efter at Spækket er skrabet af med Kvindekniven (Fig. 14), rulles sammen og i nogen Tid gemmes under Briksen eller i Solen, lader Haar og Narv sig skrabe af samtidig; man faar da lyst Skind (*úneq*). Lægges det derimod et Par Dage i gammel Urin, bliver Narven siddende, og Skindet bliver mørkt (*erisâq*).

<sup>2</sup> NANSEN skriver S. 116: »Til kajakbrug anser man de hvide, der stadig bør smøres med sælspæk, for bedst om sommeren, men derimod de sorte, der aldrig smøres, for bedst om vinteren«. Det faar staa hen, om dette Forhold har nogen Forbindelse med Udbredelsen. Ligeledes om Forkærligheden for de hvide Skind skulde hænge sammen med den store Mængde Drivis.

<sup>3</sup> GLAHN, S. 254. — Udh. af K. B.-S.



Fig. 15. Konebaade, betrukne med lyst Skind; Julianehaab.  
I Baggrunden Kajakker, ved den midterste en lys, krum Fangstblære, og  
K. G. H.'s Bygninger. (K. Stephensen fot.)



Fig. 16. Fisker ved at stige ud af Kajakken; Loddepladsen ved Eqaluit-  
imaq. Mørkt, stærkt slidt Baadskind; rank, sydlig Type. Paa Stenene i For-  
grunden nogle Rodfisk (*Sebastes norvegicus*). (K. Stephensen fot.)

hvilket med andre Ord vil sige, at Godthaaberne, der af SCHULTZ-LORENTZEN regnes til den centrale Stammegruppe, anvender samme Slags Baadskind som Sydlænderne. Naar det i senere Tid er udtalt<sup>1</sup>, at Fangstblæren yderligere skulde ligne den østgrønlandske deri, at Blæreskindets Hals og Bagpoter var forbundne med en kort Rem, beror

det vistnok paa en Misforstaaelse; i hvert Fald maa saadanne Blærer være overordentlig sjældne.

Fastbinding af Fuglespydets Sidespidser med en enkelt Surring — det næste Træk, der skal nævnes — er saare langt fra at være eneherskende i Kap Farvel-Distrikterne; Grænsen falder ret sydlig, idet man allerede i Frederikshaab ser ligesaa mange Fuglespyd med to Surringer (Fig. 17), og FABRICIUS, der 1768—'73 virkede i dette Distrikt, omtaler overhovedet kun denne Slags<sup>2</sup>. Paa den anden Side skal man helt op til Sukkertoppen, lige som for de lyse Skinds Vedkommende, for at finde Nordgrænsen for den korte, sydlige Kajpels, der minder om den østgrønlandske



Fig. 17. Sidespidser paa Fuglespyd, 2:5;  
a af Isbjørneben, med én Surring, Nanortalik;  
b af Rentak, med to Surringer, Frederikshaab.

(Fig. 18); ogsaa den findes saaledes i hele Godthaab-Distrikt.

Kastetræet mangler ganske vist, ligesom det østlige, den Indskæring for Pegefingeren, der findes ved Godthaab; men dette er aabenbart et Træk, som først fornylig har vundet Sejrr. Af de fire gamle Kastetræer fra Julianehaab-Distrikt, som foreligger i Nationalmuseet, har de to Indskæring for Pegefingeren, ganske som Godthaabsformen. Det ene (Lb 339) findes i en større Samling gravfundne Sager fra

<sup>1</sup> THALBITZER: Ethnogr. Coll., S. 457.

<sup>2</sup> FABRICIUS: Landdyr-, Fugle- og Fiskef., S. 245.

Ikerasârssuk og Kitsigssut; det andet (L 6753) er fra Uperniviarssuk. Vingeharpuner, hvortil Kastetræet er fæstet med to Bentappe ligesom paa Dupharpuner og store Lanser, er ikke ukendte i Kap Farvel-Distrikterne, hvad SCHULTZ-LORENTZEN synes at mene (Fig. 22 b).

Endelig nævner denne Forf., uden dog selv at være overbevist om Sagens Rigtighed og derfor uden at tillægge den større Værd, at Dupharpunen (for hvilken man, i forbigaaende sagt, i Julianehaab-Dialekten foruden Vestkystnavnet *unâq* ogsaa kender Østkystordet *sârgit*<sup>1</sup>) skulde være hyppigere Nord paa Kysten end mod Syd, og at Harpunspidserne her som Regel kun skulde have en enkelt Modhage. Ganske vist vil jeg anslaa Dupharpunernes Antal i Forhold til Vingeharpunernes i Frederikshaab-Distrikt til c. 1:2; men i Julianehaab-Distrikt er det omvendt, som allerede FABRICIUS har bemærket<sup>2</sup>. Harpunspidserne har normalt to Modhager (Fig. 19), som kun afviger fra f. Eks. Disko-Bugt-Formens derved, at de slutter sig tæt ind til selve Legemet; tidligere veg de ogsaa her mere ud (Lb 344, Fig. 20 a).

Hermed er Størstedelen af SCHULTZ-LORENTZEN's kulturelle Bevisgrunde gennemgaaet, og det har vist sig som en stadig gentagen Ejendommelighed, at Nordgrænserne for de nævnte Træk hverken falder sammen indbyrdes eller med Kap Farvel-Distrikternes. Det vil nu være lønende et Øjeblik at betragte et Par Overensstemmelser med Østkysten, som Forf. selv har haft Lejlighed til at iagttage, og som paa en slaaende Maade belyser Karakteren af de tidligere fremdragne Træk.

Da FABRICIUS beskrev Blærespydet, gik dets Line tværs gennem



Fig. 18. Mand med Kajakpels af kort, sydlig Form, Sydproven. (Forf. fot.)

<sup>1</sup> Paa samme Maade findes jævnsides med *uloq* (Skriftsprogets *ulo*), en Kvindekni, Benævnelser *sâkeq*; en Jagtfalk (*Falco gyrfalco*) kaldes foruden *kijeviar-sik* (*kigssaviarssuk*) ogsaa *napalikitseq*. En Række andre Ord nævnes af SCHULTZ-LORENTZEN, S. 308.

<sup>2</sup> FABRICIUS: Fange-Redsk. ved Sælh.-Fangst., S. 142; 145.

Stagen, gennemborede det krumme Blæreben fra oven og gik derpaa atter gennem Stagen og endte med en Knude<sup>1</sup>. Samme Form er i Nutiden efter Model beskrevet fra Disko<sup>2</sup>. Fra Kangermiutsiait paa Akia, Julianeh.-Distr., foreligger i Nationalmuseet et noget beskadiget Blæreben (L 6695), som synes at være af den samme Type, og fra Angmagssalik findes et Par Blærespyd (Lb 688<sup>1</sup> og L 5423), hvor Benet vel er lige, men hvor Remmen dog gaar ind ovenfra. De endnu

meget almindelige Blærespyd i Julianehaab-Distrikt afviger imidlertid fra denne ældre Form og stemmer med den, der nu er almindeligst paa Østkysten: Blærebenet er lige og staar kun lidet ud fra Stagen; Linen gaar gennem dets Fodstykke fra neden og bøjer derefter tilbage gennem Stagen som paa de andre.

Hidtil ukendt fra Vestkysten er en Slags Trædolk, med hvilken man giver den lansede Sæl Naadestødet, ganske lignende det Redskab, som ved Angmagssalik bruges paa Narhvalfangsten<sup>3</sup>. Den kaldes i den stedlige Mundart *angvileritaq*, o: »noget, hvormed man stikker et Dyr, og som derefter bevæges op og ned i Saaret«, og den findes kun i og Syd for Sydprøven. Et Stykke fra Nanortalik er afbildet Fig. 21. Det er en 73 cm lang, tilspidset, foroven noget afladet Træstok, der fortil ender i en Benspids. Hvor Haanden fatter om Vaabene, er der indsat to Kindtænder af en Klapmyds, for at Grebet kan være fast, og desuden er det

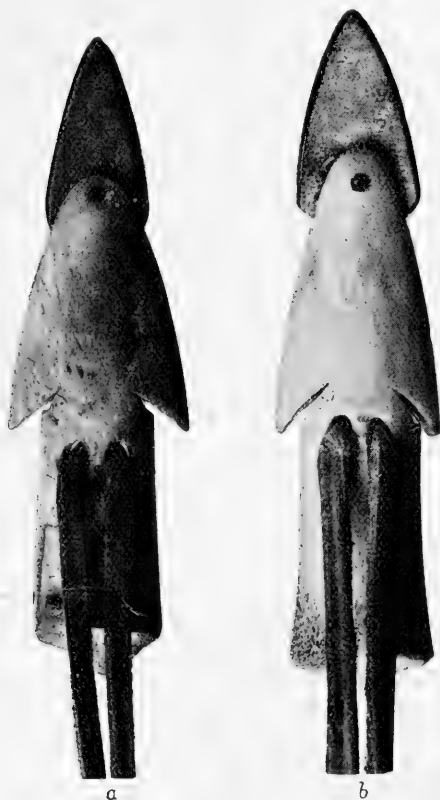


Fig. 19. Moderne Harpunspidser, 2:3; Frederikshaab.

bagtil prydet med Hjørnetanden af en Isbjørn og en rudeformet Indlægning af Ben.

I hele Julianehaab-Distrikt, men maaske ogsaa længere mod Nord, kan man af og til støde paa den fra den sydlige Østkyst kendte, brede Kajak med flad Bund og lodrette Sider<sup>4</sup>; det vides, at

<sup>1</sup> FABRICIUS: Fange-Redsk. ved Sælh.-Fangst., S. 163.

<sup>2</sup> PORSILD: Studies, S. 155 o. f.; 171.

<sup>3</sup> HOLM, Tavle 14.

<sup>4</sup> Jf. HOLM & GARDE, Tavle over for S. 67.



den først er indkommen i sen Tid, og den søger nu med Held at fortrænge den rankere, men ogsaa langt yndefuldere Vestkyst-Kajak. Forøvrigt er det øjensynligt Forekomsten af denne, endnu dog ret

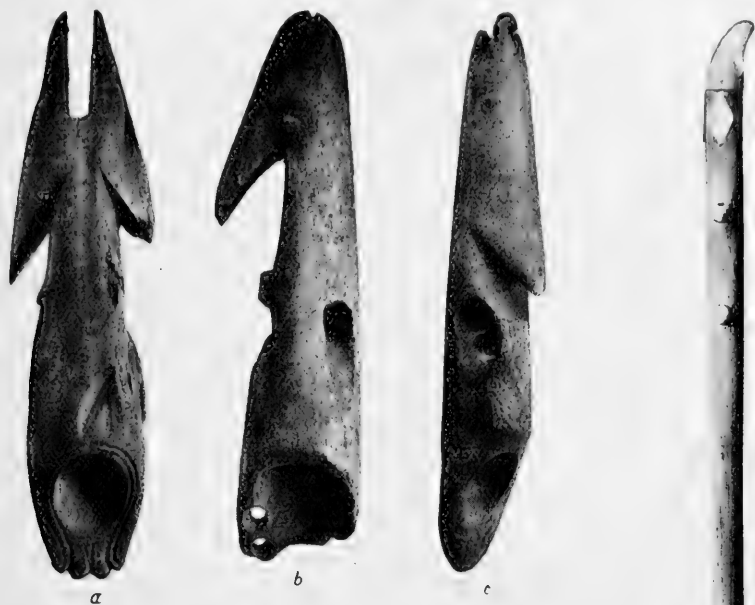


Fig. 20. Gravfundne Harpunspidser, 2:3; *a* har antagelig haft Od af Ben eller Sten, *b* og *c* af Jærn. Ikerasårssuk og Kitsigssut. (Nationalmuseet).

sjældne Type, som har givet PORSILD<sup>1</sup> den fejlagtige Forestilling, at Julianehaabs-Kajakkerne skulde være af en særlig Form.

Saa langt mod Nord som i Kolonien Frederikshaab findes Vingeharpuner med Skraaflade mellem Benvingernes Rod og tilsvarende Kastetræer med bred Hage (Fig. 22 *a*). Denne Form stammer ligeledes fra Østkysten; endnu i Firserne var den tilmed ukendt for Kommandør HOLM's Ledsagere fra Nanortalik<sup>2</sup>. Da den virkelig betyder et teknisk Fremskridt, har den efterhaanden forstaaet at bane sig Vej til Vestkysten. Det erindres, at den ved Aarhundredskiftet dukkede op sydpaa i Egnene omkring Frederiksdal og Nanortalik. Paa det afbildede Stykke ses det, hvorledes det østlige Træk er forenet med de i Frederikshaab-Distrikt almindelige, smalle og svagt hvælvede Vinger.

<sup>1</sup> PORSILD: Ein. Geräte, S. 618.

<sup>2</sup> HOLM, S. 75.

Fig. 21. Benbeslagen Trædolk til Sælfangst, 1:4; Nanortalik.

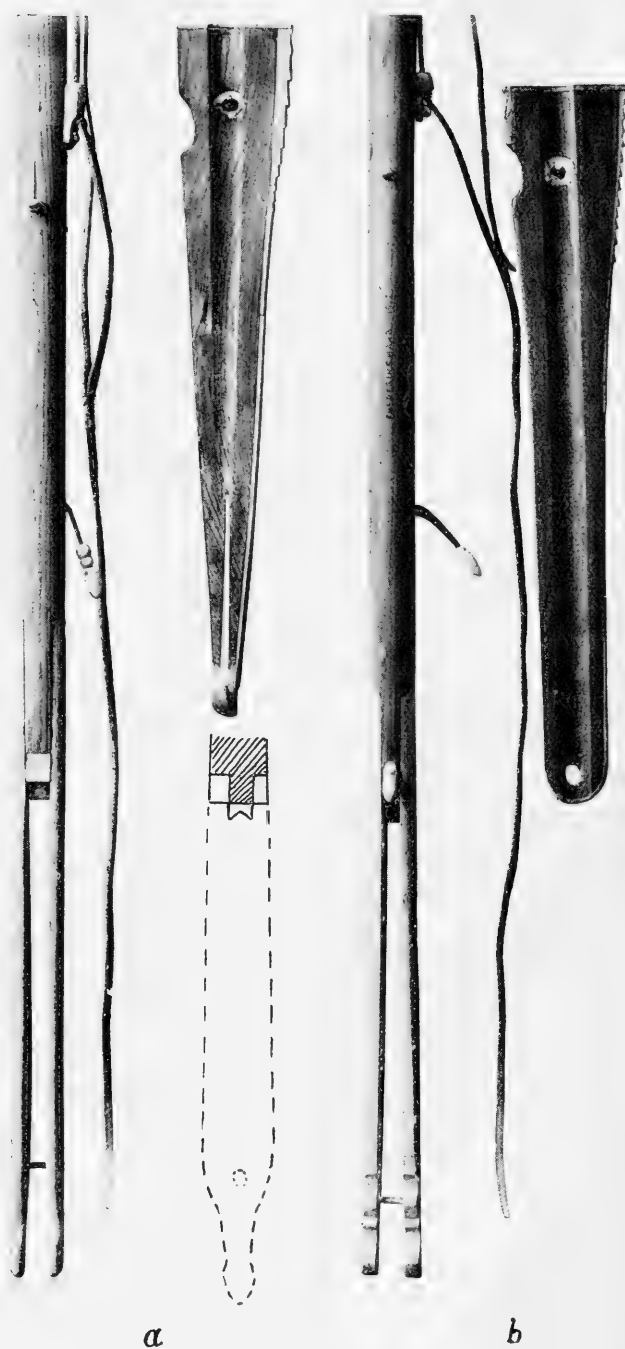


Fig. 22. Bageste Del af Vingeharpuner med Kastetræer, 1:4;  
*a* med Skraafflade mellem Vingerne, Hage paa Kastetræet; *b* med Tap  
 paa Stagen, Hul i Kastetræet. Frederikshaab.

De to sidste, historisk sikre Forhold er utvivlsomt almengyldige. Eksempler paa, hvorledes de fremdragne Overensstemmelser mellem Kap Farvel-Distrikterne og Østkysten i Hovedsagen bør opfattes: ikke som Udtryk for disse Egenes oprindelige Samhørighed, men for en almindelig Akkulturationsproces, et Led af den omfattende Kulturudveksling, der efterhaanden søger at udjævne Forskellighederne mellem Grønlands enkelte Landsdele. Et Vidnesbyrd herom er netop de enkelte Træks forskellige Udbredelse. Størstedelen af de her nævnte er antagelig vandrede fra Øst til Vest; nogle har bredt sig vidt, andre i mindre Omfang. Siden Kolonisationens Begyndelse er som bekendt hele den sydlige Østkysts Befolkning vandret omkring Kap Farvel og har slaaet sig ned i det sydlige Julianehaab-Distrikt, og selvfølgelig har dette i høj Grad bidraget til Udbredelsen af de østlige Kulturelementer. Den fladbundede Kajak og den særlige Form for Vingeharpun kunde saaledes synes at være indkomne sammen med de sidste af de hedenske Østlændinger i Eftersommeren 1900<sup>1</sup>. Andre Træk var allerede tidligere trængte frem, saaledes den omtalte Trædolke og Falsningsteknikken; denne nævnes allerede af GRAAH fra Nanortalik<sup>2</sup>.

Det har vist sig, at de af SCHULTZ-LORENTZEN fremdragne, kulturelle Overensstemmelser ikke udtrykker noget oprindeligt Slægtskab. Vi vender os derefter til de sproglige. Det er sikkert, at de to Omraaders Mundarter staar hinanden overmaade nær<sup>3</sup>, trods det, at Østlændingerne, paa Grund af den almindelige, eskimoiske Ordbytning og Omskrivning, har et væsentlig andet Ordforraad. Da denne dybt stikkende, sproglige Overensstemmelse selvfølgelig ikke kan være af sen Datum, foreligger her øjensynligt et virkeligt Bevis for Slægtskab. I denne Sammenhæng kan det nævnes, at Kap Farvel-Grønlænderne med Forkærlighed betegner sig selv som *inivit* (Skriftsprogets *inuit*), mens Navnet *kalâtdlit* er meget lidt anvendt og rimeligvis først trængt frem i sen Tid (gennem Skoleundervisningen?); heller ikke paa Østkysten bruges Ordet *kalâtdlit*<sup>4</sup>, hvorimod *inik* anvendes som Nationalnavn — modsat *qavdlunâq*, en Fremmed — saavel ved Angmagssalik<sup>5</sup> som sydligere<sup>6</sup>.

<sup>1</sup> Om disse se MELDORF, S. 20 o. f. — RASMUSSEN: Nordenv. Sv., S. 111 o. f.

<sup>2</sup> GRAAH, S. 31.

<sup>3</sup> En iorefaldende Ejendommelighed i begge er som bekendt Erstatningen af *u* med *i* (af Grønlænderne kaldet *ersinqavog*). Et meget fremtrædende Træk i Julianehaab-Dialekten er endvidere, at Substantiver, der i Skriftsproget har vokalisk Udlyd, som Regel ender paa *q*, saaledes *tugto*—*tûtoq*, Ren; *nano*—*naneq*, Isbjørn; *ulo*—*uloq*, Kvindekniv; *agpa*—*âpaq*, Lomvi. Foran *rn* findes en ret udpræget Næseklang: *arnaq*—*ârnaq*, Kvinde; *ernangnaq*—*înerngnaq*, Vingeharpun.

<sup>4</sup> GRAAH, S. 87, Fodnote.

<sup>5</sup> RINK: Østgr. Dial., S. 228.

<sup>6</sup> VIBÆK, S. 14.

Nordgrænsen for »I-Dialekten«, som SCHULTZ-LORENTZEN kalder den sydlige Mundart efter dens Hovedejendommelighed, falder nu til Dags umiddelbart Syd for Godthaab. Den er imidlertid kunstig, betinget af, at de tyske Missionærer i Ny-Herrnhut fortrinsvis virkede blandt de forbirejsende Sydlændinger og bevægede dem til at tage Bolig ved deres Station. Spørgsmaalet bliver da, hvor den oprindelige Grænse skal trækkes. Herpaa gives der et ganske utvetydigt Svar i HANS EGEDE's »Relation« om hans Rejse sydpaa for at opsøge den gamle Østerbygd. Den 17. August kom han med sine Ledsagere »ind udi et smalt Sund, der fandt vi trende Vildmands-Telter staaende, og tog der Natte-Leje. Disse Folk vare icke bange for os, men anstillede sig meget beleven og lystige. Her forandrede Folkenes *Accent* og Udtale sig noget«<sup>1</sup>. Hvilket Sund drejer Talen sig nu om her? Den 15. »vare vi *avancerede* 2de *Grader* fra *Colonien* [Godthaab], og vare nu komne til det Stæd omtrent, hvor Søe-Korterne sætter *Forbißers Straet*, nemlig paa 62 *Grader*«. Grønlænderne fortalte, at »her var vel en lang Fiord, som strakte sig langt ind i Landet, hvor de og om Sommeren have deres Tilhold, med at jage efter Rinsdyrene; men den mangfoldig Iis, der laae, kom Sonden fra omkring Hukken eller den yderste Odde af Landet, fra den Østre Side, og ved sydlige eller vestlige Vinde drev ind paa Landet, og opfyldte alle Bugter og Viger«. Dette Sted er antagelig ved Mundingen af Sermilik Syd for Frederikshaab, hvor Storis og Kalvis ofte pakker sammen i saa stor Mængde, at Baade maa staa flere Mil til Søs for at slippe over. Denne Opfattelse stemmer med WALLØE's<sup>2</sup>. Næste Dag kommer de »efter 5 à 6 Miles Sejlen forbi nogle store og steile Klipper og Forbierge, som i Kortet kaldes *Cap. Comfort* [rimeligvis Tindingen og Kangeq] .... ind i et smalt Sund imellem nogle høje Klipper og Øer ...«. Dette passer paa det berygtede Törnårssuk-Løb, hvor man søger Læ for det aabne Davis-Strædes tunge Søer. Den 17. kommer de efter nogle Mils Fart »ud til Hav-Siden«, hvor Vind og Strøm »giorde en forskrekkelig huul Sø« o: de gaar uden om Sánerut, og naar endelig om Aftenen det omtalte Sund, der da ikke kan være noget andet end Torssukátaq, gennem hvilket man søger inden om Nunarssuit.

Torssukátaq fører ud i den store Julianehaab-Bugt; her er det altsaa, at »I-Dialekten« oprindelig hører hjemme paa Vestkysten. Dette stemmer ganske med FABRICIUS's Ytring, at Sydlænderne »kan regnes fra Friderichshaabs Handels-Districts sydlige Ende og videre hen mod *Staten-Huk*«<sup>3</sup>, og med hvad man maatte vente af de geografiske Forhold. Julianehaab-Bugt er som skabt til at være et selvstændigt Folkecentrum, kendetegnet, som den er, ved en umaadelig rig Fangst, idet den delvis standser den mægtige Strøm af

<sup>1</sup> H. EGEDE, S. 106. — Udh. af K. B.-S.

<sup>2</sup> WALLØE, S. 113.

<sup>3</sup> FABRICIUS: Fange-Redsk. ved Sælh.-Fangst., S. 145.

Drivis, Storisen (Fig. 1), som gaar ned langs Grønlands Østside og bøjer et Stykke op ad Vestkysten. Hele Strækningen nordpaa indtil Godthaab-Egnen er derimod en fattig og selv i vore Dage meget sparsomt beboet Kyst, og efter EGEDE's udtrykkelige Angivelse maa jo Befolkningen her paa hans Tid have talt den midtgrønlandske Mundart, »U-Dialekten«<sup>1</sup>. Naar dens Maal nu er sydlandsk, maa det skyldes den af Missionærerne bevirkede Indblanding af Sydlændinger i Befolkningen. Baade i dens Legemsbygning og Kultur synes der imidlertid endnu at være Træk, som vidner om de oprindelige Forhold. Beboerne af Julianehaab-Distrikt »ere gemeenlig store og stærke imod de Nordligere«<sup>2</sup>, »wohlgebildeter, munterer u. gefülliger als die im Westen«<sup>3</sup> og synes rent fysiognomisk at minde om

Angmagssalikerne (Fig. 23); i Frederikshaab-Distrikt er Ansigtstypen langt mere i Retning af det »mongoloide«. *Index cephalicus* ♂ er henh. 78,1 og 76,8<sup>4</sup>. I hele Julianehaab-Distrikt mangler ganske den lille Lansen, som findes paa hver eneste Kajak i Frederikshaabs. Forholdet mellem de to Harpunformer har vi nævnt. Selv i vore Dage hævder Julianehaaberne til



Fig. 23. Mandstype; Julianehaab. (Forf. fot.)

en vis Grad deres kulturelle Uafhængighed; mens det moderne Kajakskydesejl i Frederikshaab-Distrikt er af den sædvanlige, midtgrønlandske Type, findes der sydpaa jævnsides to særlige Former (Fig. 24). De kan bægge drejes om en lodret Akse (over Krydset i *a*, til højre for det i *b*). Derved opnaar man at kunne anbringe dem, før man gaar paa Fangst; de stilles da parallelt med Kajakkens Længdeakse

<sup>1</sup> Befolkningen ved Arsuk og Kangårssuk skal af Grønlænderne regnes for noget for sig selv. Ogsaa GIESECKE opfatter dem som en Enhed, for saa vidt han kalder dem »die wildesten und schlimmsten im ganzen südlichen Grönland« (S. 202). Maaske udgør de en egen Stamme.

<sup>2</sup> FABRICIUS: Fange-Redsk. ved Sælh.-Fangst., S. 145.

<sup>3</sup> GIESECKE, S. 22.

<sup>4</sup> HANSEN, S. 203.

for ikke at fange Vinden, og skubbes med Harpunen i Stilling, naar man nærmer sig Fangstpladsen.

Vi er komne til det Resultat, at Befolkningen i Julianehaab-Bugt oprindeligt er nærmest beslægtet med Østkystens; men heraf følger naturligvis ikke, at den er indvandret østfra. Det betyder intet, at »Skrællingerne« aabenbart kom til Østerbygden Syd om Kap Farvel; ti Erik den Røde havde som bekendt allerede fundet »Opholdssteder for Mennesker baade Øster og Vester paa Landet samt Brudstykker af Baade og forarbejdede Stensager«<sup>1</sup> paa sin Landnamsfærd i 982—85. End mindre siger det, at der, som SCHULTZ-LORENTZEN viser, ved den danske Kolonisations Begyndelse fandtes en vis Tilbøjelighed hos Sydlænderne til at rejse nordpaa, da man ikke kan tillægge det anden Betydning, end at Tilbøjeligheden fandtes paa nævnte Tidspunkt og den desuden forklares ved, at Sydlænderne i stor Udstrækning tog Del i Hvalrosfangsten ved Holstensborg og dér paa Perutussut-Øer (Taseralik)<sup>2</sup> tilbyttede sig Narhvaltænder og Hvalbarder fra Disko imod Kobberemme fra den rige Remmesælfangst syd-

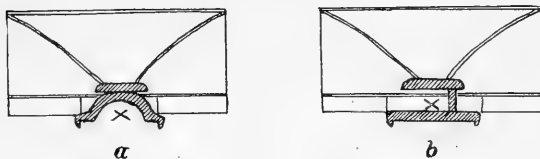


Fig. 24. Skydesejl til Kajak; Julianehaab-Distrikt. Bøsseposen hviler ved Krydset.

paa og Vegsten, som de undervejs skaffede sig ved Godthaab<sup>3</sup>, og som næsten ganske mangler Nord for Sukkertoppen<sup>4</sup>; nordpaa kom desuden det 17. Aarhundredes britiske og nederlandske Hvalfangere, hvis Metalvarer og Glasperler spredtes vidt om Lande. Hvis man uden videre vilde gaa ud fra, at allerede Disko-Bugt maatte virke omformende paa en nordfra kommende Kultur, vilde der ganske vist i Paavisningen af Kap Farvel-Kulturens oprindelig arktiske Præg være et stærkt Argument for en Indvandring østfra; men selvfølgelig tør man ikke gaa ud fra en Forudsætning, der udelukkende er bygget paa teoretiske Betragtninger. Man maa søge direkte at bestemme Indvandringsvejen, og Midlet vil være et Studium af de grønlandske Kulturstrømme. Ti vel maa nye Kulturelementers Udbredelse i Grønland sikkert for en meget stor Del bero paa Meddelelse og ikke paa Vandring, men Meddelelsen maa antages hovedsagelig at have fulgt den naturlige Vandringsvej.

Først og fremmest vil man da lægge Mærke til den nøje Overensstemmelse mellem Vestkysten og selv ret nordlige Egne paa Østkysten

<sup>1</sup> »þeir fundu þar manna vister bæpi austr oc vestr a landi oc kæiplabrot oc steinsmipi . . .«, Grønl. hist. Mindesm. S. 168.

<sup>2</sup> THORHALLESEN, S. 97.

<sup>3</sup> DALAGER, S. 82. — GLAHN, S. 262. — FABRICIUS: Grønl. Sæle, S. 151.

<sup>4</sup> GIESECKE, S. 146.

(om de nordligste kan intet udtales, før »Danmark«-Ekspeditionens Fund foreligger beskrevne); endog særlig grønlandske Former kendes heroppe fra: Vingeharpunen, Lampestolen, de lige Sidespidser til Fuglespydet har været brugte ved Scoresby-Sund<sup>1</sup>; Harpunspidsen med en enkelt, lateral Modhage og to Dorsalsporer (*Lb* 344, Fig. 20 *b*) kendtes sammesteds<sup>2</sup> og Typen uden Modhager, med en enkelt, noget kløftet Dorsalspore og Linekanalens Aabninger anbragte paa Bugen over hinanden foreligger fra Skærgaards-Halvø<sup>3</sup>.

Denne Overensstemmelse vil kunne forklares paa tre Maader: ved at antage, at de specielt grønlandske Former er udviklede uden for Grønland, og at Indvandingsstrømmen har delt sig i to, der er gaaet sydpaa, hver ad sin Kyst; eller ved at antage en almindelig Indvandring sydpaa ad Østkysten og mod Nord ad Vestkysten; eller endelig ved en almindelig Vandring den modsatte Vej.

Den første af disse Muligheder er i sig selv lidet sandsynlig, og man skulde vente, at dens Rigtighed vilde give sig til Kende ved en større Rigdom paa Former paa Kysternes nordlige Del end paa den sydlige; men noget saadant vil man ikke finde. Ganske vist har en enkelt Form som det midtpaa indsnævrede Naalehus med to vingelignende Fremspring længe kun været kendt fra det nordlige; men et Fund fra nyeste Tid har nu ogsaa bragt den for Dagen i Julianehaab-Distrikt (*L* 6775, Fig. 25).

Der findes ligeledes vægtige Grunde mod den anden Mulighed. Allerede STEENSBY nævner<sup>4</sup>, hvorledes Vestkysten som den i antropogeografisk Henseende mere begunstigede maatte virke mest tiltrækkende paa Indvandrerne. SOLBERG mener<sup>5</sup>, at der næppe kan være Tale om nogen ægte Stenalder paa den nordlige Østkyst, og antager overhovedet, at Bosættelsen her er af sen Datum.

Disse Omstændigheder taler i høj Grad for den tredje og sidste Mulighed, hvis Rigtighed yderligere bekræftes af andre Forhold. En Række utvivlsomt sene Former synes f. Eks. ikke at være naaede til den nordlige Østkyst. Den tvearmede Kvindekniv er i hvert Fald foreløbig ikke beskrevet fra noget nordligere Sted end Skærgaards-Halvø<sup>6</sup>. Spæklampen med Skillevæg og stejle Sider, Harpunspidsen



Fig. 25. Naalehus af Ben, fra en Grav paa Arpåsivik; 1:1. (Nationalmuseet).

<sup>1</sup> RYDER: Esk. Bebygg., S. 313, 327, 316.

<sup>2</sup> Smst., S. 313.

<sup>3</sup> THALBITZER: Amdrup Coll., S. 348.

<sup>4</sup> STEENSBY: Pol. Esk., S. 403.

<sup>5</sup> SOLBERG, S. 55 o. f.

<sup>6</sup> THALBITZER: Amdrup Coll., S. 401.

med to Modhager og en enkelt Dorsalspore (Fig. 19) synes aldrig at have bredt sig ud over Vestkysten. Selvfølgelig behøver en Form dog ikke at være gammel, fordi den findes paa den nordligere Østkyst; tværtimod maa det antages, at Bosættelsen her er saa ny, at adskillige ret sene Former allerede forinden var naaede op til dennes Udgangspunkt og derfor blev bragte med videre nordpaa. Den af AMDRUP og RYDER fundne, firkantede Hustype røber sig saaledes ved sin Form og Bygning tydeligt som et forenklet Fælleshus, ikke — hvad AMDRUP har ment<sup>1</sup> — som en Forløber for dette (se S. 11).

Det er da indlysende, at SCHULTZ-LORENTZEN's Hypotese om Indvandningsvejen ikke kan opretholdes. Julianehaab-Bugts Befolkning tilhører vel samme Stammegruppe som Østkystens, men denne Gruppe er kommen ad Vestkysten. Da vi har paavist dens Kulturs oprindelig arktiske Præg, maa det antages, at arktisk Kultur engang har været udbredt over hele Vestkysten, et ikke uvigtigt Forhold, ti herved forklares da, at Angmagssalik-Kulturen kan være arktisk, uden at man behøver deri at se et Vidnesbyrd om direkte Indvandring nordfra. Bosættelsen behøver blot at have fundet Sted, før det arktiske Præg gik tabt vesterpaa. —

Hvis vi samler, hvad der foreløbigt er klarlagt, og stiller dette i Forhold til Julianehaab-Kulturens egen, indre Udvikling, viser det sig, at følgende Trin lader sig opstille:

1) Arktisk Kultur, som antagelig har stemt overens med den ældste Angmagssalik-Kultur.

2) Subarktisk Kultur, som efterhaanden har antaget den øvrige Vestkysts Præg.

3) Subarktisk Kultur, som paany nærmer sig Angmagssalik-Kulturen ved at optage en Række østlige Bestanddele, og som tillige paavirkes stærkt af den danske Kolonisation.

Vi skal nu ganske kort udrede, hvad der kan ligge til Grund for disse Perioder. Den sidste af disse, hvorom man selvfølgelig med størst Sikkerhed kan udtale sig, er øjensynligt betinget af Handelen med Evropæerne. Efter at Julianehaab-Bugt engang for alle havde skilt sig ud fra Kulturfællesskabet med Østkysten, har nemlig Forbindelsen sikkert været ringe, som antydtes af de før nævnte Former, der netop er standsede ved Kap Farvel. Østkysten havde jo intet at byde, som man ikke kunde forskaffe sig under Fangstrejserne nordpaa. Det har sikkert navnlig været Oprettelsen af de danske Butikker paa Vestkysten, som paany knyttede den brudte Traad sammen og saaledes bevirkede, at en Del i Mellemtiden opstaaede Østkystformer fandt Vej omkring Kap Farvel. Kolonisationen kom først sent sydpaa; Julianehaab blev grundlagt 1775 og Frederiksdal endda ikke før 1824. Selv om man imidlertid antager, at allerede Hvalfangernes Besøg har

<sup>1</sup> AMDRUP, S. 322 o. f.



indvirket paa Østkystens Befolkning, kan den tredje Periode saaledes endnu ikke have 300 Aar bag sig.

Om det andet Tidsrums Varighed er vi ganske uvidende. Derimod ses det let at være en naturlig Følge af de geografiske Forhold, naar Julianehaab-Grønlænderne efterhaanden var blevne forenede med deres Naboer imod Nord. Ved Godthaab havde man fuldt op af den for Eskimoerne saa værdifulde Vegsten, som kun sparsomt findes sydpaa (i et vanskelig tilgængeligt Brud paa Sermerssut ved Arsuk<sup>1</sup> og paa Akia over for Julianehaab<sup>2</sup>), og længere mod Nord lokkede Hvalrosfangsten. Tilmed kan de lidet beboede Egne mellem Julianehaab-Bugt og Godthaab hverken i Udstrækning eller Farlighed maale sig med Vejen mellem Kap Farvel og Angmagsalik, Brændpunktet for Østkystens Befolkning; thi den er maaske den mest barske og ugæstfri Del af hele Grønlands Kyst, med uigennemtrængelige Masser af Storis, vældige Storme, farlige Udhavnæs og mægtige Isstrømme, der kappes om at gøre Landet saa lidet skikket for Menneskebolig som muligt.

Med den ældste, arktiske Kulturperiode naar vi endelig ned paa ganske bar Bund. Saa meget des mere beklageligt, som det utvivlsomt er her, man skal søge Løsningen paa saa vigtige Opgaver som den sydgrønlandske Stenalder og Forholdet til Nordboerne. Før Grønlands Oldhistorie ligger klar, maa der i det hele taget foretages Rækker af arkæologiske Undersøgelser. Alle Egne, alle Distrikter trænger dertil, men to gaar vel nok i Vigtighed frem for alle andre: for det første Julianehaab-Distrikt, hvor Øst og Vest mødes, hvor Skuepladsen findes for det første Sammentræf med den gamle Verdens Kultur, og hvor netop Lævningerne fra Nordbotiden i mange Tilfælde vil kunne give Forskeren Midler til Tidsætning i Hænde — og for det andet Kap York-Distrikt, Grønlands Port ud mod den øvrige, eskimoiske Verden, hvor Bølge paa Bølge er skyllet ind og har aflejret de Lag, hvis tavs Sprog Etnologien i sine forskellige Grene nu søger at tyde.

<sup>1</sup> GIESECKE, S. 232. Det er antagelig det samme, som WALLØE fejlagtigt henlægger til Törnårssuk (S. 118). Formentlig uden økonomisk Betydning var Forekomsten ved Torssukátak ved Kap Farvel (GAAH, S. 66) og de ringe Mængder paa Kobberø (GIESECKE, S. 211) o. a. St.

<sup>2</sup> CLEMMENSEN, S. 346 o. f.

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**Til Körtet!** Dette er udført efter det Kgl. Sokort-Arkivs Kort over «Grønland, sydlige Del, 1889» og omfatter Frederikshaab- og Julianehaab-Distrikt. Navnene er, ligesom i Afhandlingen, stavede efter KLEINSCHMIDT's Metode, dog saaledes, at Lydlængde, *q* og *ss* ikke er særligt betegnede. Dyrenavnene siger intet om de paagældende Arters geografiske Udbredelse, men angiver kun en paa Stedet betydningsfuld Fangst. Renen forekommer ikke Syd for Sermiliarssuk og jages af overtroiske Grunde ikke mellem Kvannefjord og Sermilik.











II.

AN ANTHROPOGEOGRAPHICAL STUDY  
OF THE  
ORIGIN OF THE ESKIMO CULTURE

BY

H. P. STEENSBY



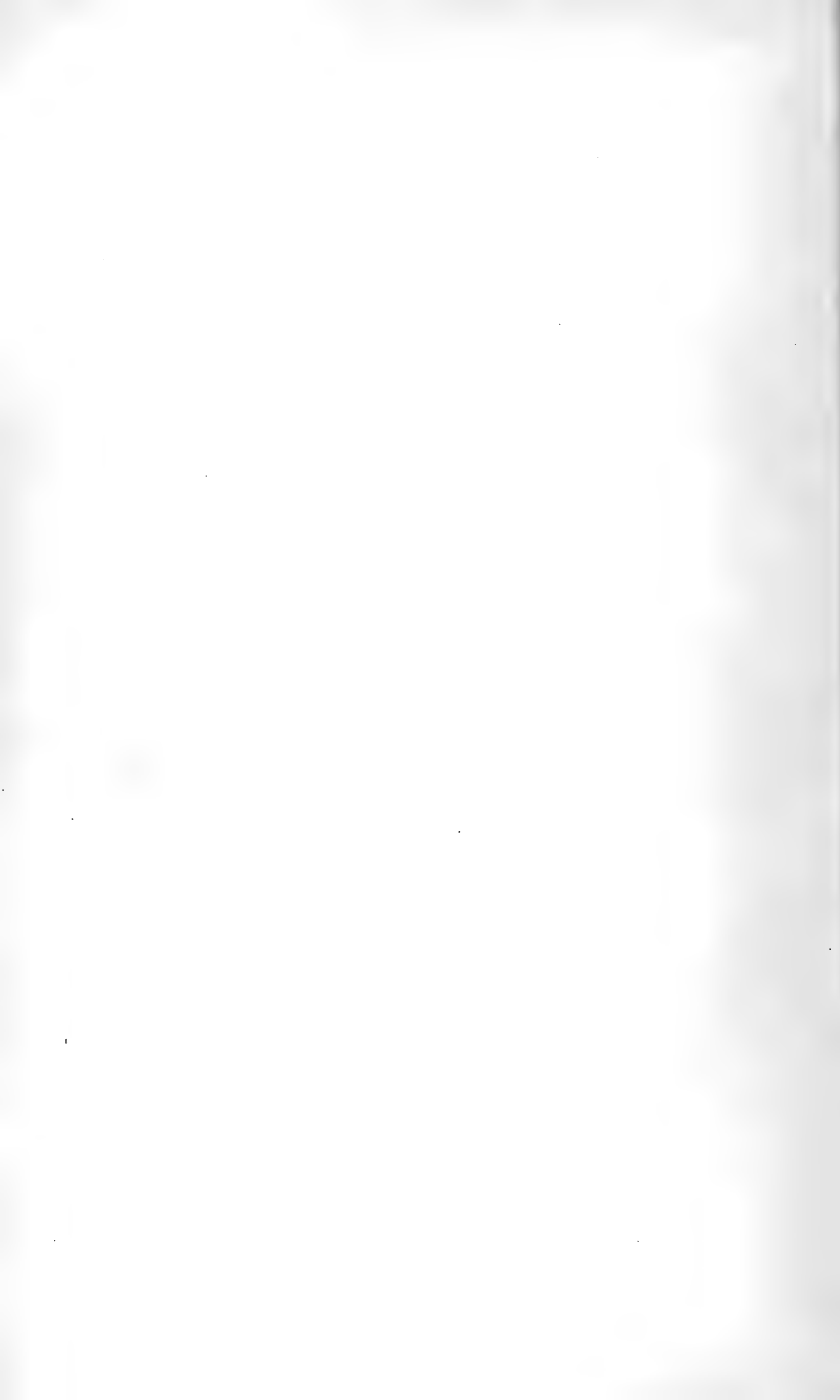
## PREFACE

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**I**N this work, which I have called an Anthropogeographical Study, I have further carried out the scientific method and the considerations which I had already set forth in my preliminary paper on the subject "Om Eskimokulturens Oprindelse" which was published in Danish in 1905. The present work, however, must not be regarded as a mere translation of the named paper. The three introductory chapters have been revised, but their contents are otherwise mainly the same. As regards the following descriptions of the types of Eskimo culture, some of the chapters have been rewritten, and in regard to all the chapters I have as far as possible taken into consideration the results of the later expeditions and explorations. As regards the Polar Eskimo and the Greenlanders, I must in this connection mention my own observations and studies, made in the intervening time. The chapters following the description of types are, on the other hand, quite new, it having been possible for me to give a more elaborate argumentation for my results and to carry them somewhat further than I was able to do in 1905. Among the various things which have made this possible may be mentioned the important results brought home during the last 10 years by the Danish expeditions to the east and north coasts of Greenland, which have enriched our knowledge as regards an important and hitherto missing link in the chain of distribution of the Eskimo.

I wish to call attention to the fact that in citing authors I give only the name of the author and the Roman figures which in the Bibliography are prefixed to the titles of their works, when these number more than one. "Meddelelser om Grönland" is in most cases abbreviated to M. o. G.

*H. P. Steensby.*



## Introductory Sections.

### The Eskimo Culture and Theories on its Origin.

**T**HE Eskimo have never played a great rôle in the world's history, and it is scarcely likely that they ever will have the chance of doing so. Since early times their part in history has consisted only in the small, but dramatic, episode of the destruction of the Scandinavian Colonies in South Greenland.

Their later contact with the Europeans has been distinctly marked by peacefulness, and by the absolute impotency in a general martial and political sense, of this small population. On the other hand they have gained a certain respect from the Europeans with whom they established a connection, by producing a culture which has overcome the difficult conditions of subsistence in the Arctic North, and also, because, as regards certain dexterities, they really furnish an example of the utmost effort of human ability.

As regards popularity, the small, badly groomed, Eskimo have always been outshone by the Indians in their traditional form. Scientifically, also, a strong diversity has been conceived. As regards the purely physical appearance it seemed even to CRANZ that there was more similarity between Eskimo and Tunguses and Kalmucks than there was between Eskimo and Indians; and when RINK, in 1871, read a paper in the Anthropological Institute in London, where he maintained the American origin of the Eskimo, it was refuted by CHARNOCK, who emphasized the gulf between the Eskimo and the Northern Indians, in linguistic, physical and other respects.

In this way there are two continents in which the dispute as to the primeval home of the Eskimo is contested: America and Asia. The dispute is old, and can still be said to be far from being finally decided.

Along what paths the knowledge of the Eskimo has passed into European literature is witnessed in the name of the tribe itself. The term Eskimo (Esquimaux) is, so to say, the French form for an Algonquin word, which means something like "those who eat raw meat." The Frenchmen in Newfoundland and Canada heard it from the Abnakis who lived on the north side of the Gulf of St. Lawrence, in unceasing hostility to their Eskimo neighbours on the coast of Labrador;

but, by the Cree-Indians the name is also used for the Eskimo west of Hudson Bay. From French and English literature the name passed to all other languages.

Another name used for the Eskimo is *innuit* (plural of *inuk*, human being), which originates from the Eskimo themselves. In the middle ages, except in Scandinavia, there was little use for the old Scandinavian term *Skræling* (plural *Skrælinger*); nor did the term *Orarians*, or coast inhabitants, as proposed by DALL, become current.

The home of the Eskimo is the Arctic north coast of the American Continent and the Arctic Archipelago situated in front of it, together with the large island of Greenland. Consequently, they are what FR. RATZEL has designated a "border people," or a people which lives along one of the outer edges of the inhabited world.

Such a people is, as a rule, at a low stage of culture. In the literature on the subject the low cultural standpoint of the Eskimo is also frequently emphasized. And it cannot be denied that in certain directions, for instance as regards social organisation, the Eskimo display somewhat inferior development. But it is a question whether this inferior social differentiation is due to primitiveness, or whether it is not rather a result of the natural conditions under which the Eskimo have lived from time immemorial.

No deep knowledge of the Eskimo culture is needed to see that it is a culture which has been obliged to employ an immensely large part of its force simply to develop the means wherewith to gain a livelihood, or the mode of procedure by which each individual man or bread-winner may secure his own and his family's supply of food and clothes, and a dwelling — three things which are equally necessary in the polar regions.

When we take into consideration the high development reached by the Eskimo hunters as regards skill in the making of a livelihood we must, without doubt, rank Eskimo culture high within this class of culture — viz., hunting culture — to which it belongs in the system of historical culture. The special development of hunting ability in the way of enduring fatigue, suffering hardships, showing courage, and especially as regards the adroitness in the use of the implements, naturally results in the more individual qualities being specially brought under cultivation, while the more social side of the culture in question has, as a rule, been allowed to lag behind, or perhaps, in certain cases, may even be regarded as having fallen into decay compared with the more differentiated conditions of former times. These are all questions, however, which are not going to be investigated here.

The economic culture of the Eskimo has often awakened the admiration of travellers by the cleverness with which it is adapted to the natural conditions, and, considering they are a primitive people,

by the unusually large number of implements which are in use. It has been described so often, however, and is so well-known, that here only the principal forms of implements, articles for use, dwelling-houses, and lastly a few specially important hunting methods will be called to mind. Some other hunting methods of importance will be mentioned and described in the following chapters.

These are the kayak, umiak (woman's boat), harpoon, and bird-dart with throwing board, the three-pronged salmon-spear, the compound bow, strengthened by a backing of sinew, the dog sledge, the snow shoe, the winter house and snow house with the lamps for burning blubber oil, and the platform, the summer tent, and lastly the skin-garments. The nearer description of these various contrivances as adapted to one another must here be taken as known.

Among the various methods of hunting, the hunting of seals from a kayak is well known, while the Maupok method has been less noticed. The word "Maupok" signifies "he waits" and refers to the fact that the hunter stations himself at the hole which the seal keeps open in the ice during winter, and waits until the seal comes up to blow. The hunter stands motionless, or he sits upon a small three-legged stool, sometimes for hours, before the seal comes up to the breathing hole, when he instantly thrusts the harpoon into the animal, which disappears into the water as quick as lightening, pulling off the harpoon head and disengaging the detachable foreshaft. It soon gets exhausted, however, so that it can be hauled up and killed; the hole is then widened and the prey drawn up.

This method of hunting is practised throughout the winter. In the spring, on the other hand, the seal creeps up onto the ice to sun itself and is hunted as follows: the hunter lies down and, imitating the movements of a seal, approaches his prey. If he succeeds in getting within a convenient distance of the seal, he rushes up to it and thrusts the harpoon into it. The point is to be quick, as the seal never goes far from its hole in the ice, but lies ready to plunge into the water. This method of hunting is called the "Utok method" from the Greenland expression for a seal that has come up upon the ice to sun itself. Besides these, there are other methods of hunting which are connected with ice, and are of ethnographical importance. For the present, I shall only call to mind the hunting at cracks in the ice, which is carried on during the latter part of spring and early summer, when the ice begins to break up.

It has been said that scarcely anywhere else on earth does there exist a people living in groups scattered over so extensive an area which at the same time shows such remarkable homogeneity both in culture and language as the Eskimo do, and there can be no doubt as to the correctness of this.

As regards culture, in particular, the congruity has been obvious

enough. With its characteristic skin-boats, its individual missile-weapons, and its whole coastal character, the Eskimo culture was easily distinguishable, whether met with in the most north-west parts of the Atlantic Ocean or the northernmost part of the Pacific: and its aloofness from that of the neighbouring folk is marked by an equally distinct stamp of individuality. As will be seen from the following description of types, there are, however, several cultural nuances within the Eskimo culture, and some of these present themselves under conditions which only an anthropogeographical treatment can satisfactorily explain.

As regards language the Eskimo are conspicuous among their surroundings by a similar stamp of individuality and a similar homogeneity. The philologist, G. KLEINSCHMIDT, pointed out that the languages in Greenland and Labrador were "less different than, for instance, Danish and Swedish or Dutch and Hamburg Low-German." It is to be regretted that no actual philologist has had occasion personally to compare the Eskimo languages in Greenland and Labrador with those spoken furthest west in Alaska, but there is sufficient evidence that the differences are not so great that the Eskimo from the easternmost regions would not quickly learn to understand those from the westernmost regions.

The Danish philologist, W. THALBITZER, who is one of those who have most recently treated these questions, writing about the languages from two places so far apart as the east coast of Greenland (Angmagssalik) and the Asiatic side of Bering Strait says "there exists a difference of dialect about equivalent to the difference between two related languages (like English and German). The transitions from dialect to dialect seem to take place on the whole steadily and gradually in the interjacent districts,..."<sup>1</sup> As regards the independence of the Eskimo language, he writes in the same place that it "constitutes an independent family of languages. No one has as yet succeeded in finding any language either in Asia or among the American Indians which might possibly have been originally related to it."

In this connection, however, it should be remarked even here that there are two peoples which, while culturally exhibiting the Eskimo characteristics, differ linguistically. They are the so-called coast Chukches in northern Asia (who should not be confused with the Asiatic Eskimo). These coast Chukches speak Chukche, and are a branch of the Chukches, but have adopted the Eskimo economic culture. Then there are the Aleuts, called after the islands on which they live, or, strictly speaking, the original inhabitants of the Aleutian Islands, who live in the same way as their neighbours, the Eskimo of South Alaska, but who, linguistically, are decidedly apart from them.

<sup>1</sup> M. o. G., Vol. 31, p. 45.



It is evident that such congruities both in culture and language over such an extensive area can only be the result of a comparatively late dissemination from a more limited area. To find out this limited area by studying the various nuances of the economic culture is the main object of this work. The easternmost point where individuals possessing Eskimo culture have been met with is the east coast of Greenland situated about  $20^{\circ}$  W. long., and the westernmost is the Siberian Tschaunbay situated about  $170^{\circ}$  E. long. The southernmost limit to which the Eskimo wandered — at any rate during the later centuries — was the Strait of Belle Isle, situated  $51^{\circ}$  N. lat., and the northernmost Robeson Channel and Danmarks-Fjord in northernmost Greenland, situated  $82^{\circ}$ — $83^{\circ}$  N. lat. Consequently, the dissemination extends over 30 degrees of latitude, and over half of the entire circumference of the earth in the southern part of the North Polar Zone.

RINK has computed the distance from the southernmost point of the Eskimo range in Alaska to the most south-eastern point in Labrador to be 10—11,000 kilometres along the coast, which the Eskimo follow. And the distance from Labrador to the east coast of Greenland, which indicates the third corner of the angle in the great triangular area of distribution, the two other corners being South Alaska and Labrador, to be just as great. In comparison with these enormous distances over which the Eskimo are distributed, the area of their lands is relatively small, as they usually inhabit the coasts only, while the interior of the countries is, as a rule, either destitute of population or occupied by other tribes.

Apart from the Aleuts and the coast Chukches the Eskimo are frequently divided into a western and an eastern section, WAITZ set the boundary between these sections at the mouth of the Mackenzie. RINK shifted the point of demarcation to the somewhat more easterly situated Cape Bathurst ( $127^{\circ}$  W. long.), which is now that generally adopted. But this boundary is not really a fortunate one either, as the same tribe wanders about on both sides of this headland. The now uninhabited stretch of coast between Darnley Bay and Dolphin and Union Strait, or approximately between  $124^{\circ}$  and  $116^{\circ}$  W. long., must be regarded as a better boundary. But in reality the distinction between West and East Eskimo is quite artificial, or practically of a geographical nature. A boundary of any great importance does not exist at the place in question, a fact which, especially lately, has been proved by STEFANSSON's observations.

BOAS<sup>1</sup> has shown how there are connecting routes between the eastern groups of Eskimo, which, though not regularly used, yet probably, at some time within living memory, have given occasion

<sup>1</sup> BOAS, I, p. 89.

for connection between the groups or tribes. This link extends from Baffin Land to the Melville Peninsula, from Rae Isthmus to the Boothia Isthmus, and from Simpson Strait to Coronation Gulf. A conflux exactly corresponding and at least as well developed took place among the West Eskimo. Not only was there a lively connection across Bering Strait, but from here the trading route went southwards to Norton Sound, and also northwards along coasts and rivers to the Arctic Ocean, and further towards the east to the Mackenzie Eskimo. When, from the south, the English travellers came to these, they found them in possession of articles of Russian manufacture, which the Eskimo said they had obtained along the trading route mentioned above. On the other hand, no such commodities were found at Coronation Gulf; but this only serves to show that the Eskimo here lived more out of the beaten track, just as it reminds us that their trading connection ultimately took the direction of Hudson Bay.

For practical reasons it is usual to divide the Eskimo into Greenlanders, Labradorers, Central Eskimo (by which is understood the East Eskimo in the Arctic Archipelago and on the coast of the adjacent mainland), Mackenzie Eskimo, the Eskimo in Alaska and in Asia, and, lastly, Aleuts.

This division is, however, not of great importance as regards their culture, historically. On the other hand, it is of importance in anthropogeographical respects in order to distinguish between Arctic and Subarctic, as the Eskimo inhabit both distinctly Arctic regions and tracts of coast with a cold-temperate coast climate. The Greenlanders south of Holsteinsborg and the inhabitants of Alaska south of the Yukon Delta are reckoned as being distinctly Subarctic. The related conditions in climate and the nature of the ocean in and near South Greenland and South Alaska effect a predominance of certain fixed features in the conditions of culture, so that it is fully justifiable to talk of a Subarctic form of Eskimo culture in contradistinction to the Arctic form in the more decidedly Arctic regions.

The total number of individuals of the whole tribe was estimated by RINK to amount in 1887 to 31—32,000 souls. Of this number, one third or about 10,000 fell to Greenland, about 4,000 to the Archipelago, some 2,000 to Labrador, and he assigned a similar number to Mackenzie and to Asia, and, lastly, fully 11,000 to Alaska. Of these numbers, that given for Alaska is evidently wrong. In 1880 the U. S. A. instituted a thorough census, with the result that there were 17,617 Eskimo in Alaska besides 2,143 Aleuts. In further conformity with this, KURT HASSERT in 1891 estimated the total number of Eskimo at about 40,000; a number which must be assumed still to have approximate validity.

A complete description of the history of the discovery of the

Eskimo will not be given. Here the intention is only shortly to point out how it is the Eskimo culture in its Subarctic condition which first became known and described, and ever today holds good as being the typical one, both when scientific treatment and the derivation of its relationship are in question.

From the days of Eric the Red till about 1400 the Scandinavian Greenlanders were to a certain extent in touch with the Eskimo, to which the Saga reports bear witness. Vinland travellers met people who decidedly must have been Eskimo; the interesting question whether they also came into contact with the Indians will not be entered upon here. From 1400 till the beginning of the 18th century sailing-expeditions from time to time came across polar peoples, and even seized whole families, whom they carried back to Europe, where they caused a certain sensation.

It was, however, neither the Sagas nor the later reports of the travellers JOHN DAVIS and MARTIN FROBISHER which laid the foundation of the modern conception of the Eskimo.

Not until 1719 did the Dutch, and, somewhat later, the English, begin to engage in regular whale-hunting in Davis Strait or the west coast of Greenland as far as Disco. If matters had been allowed to run their own course here, as formerly in Labrador, where the natives and the hunters carried on a mutual war of extermination<sup>1</sup>, there is hardly any doubt that history would have repeated itself; happily this did not happen. In 1721 HANS EGEDE's mission began, and the sensible measures which resulted therefrom permitted the Eskimo economic culture to thrive in peace, while at the same time the people became possessed of those benefits of European culture which were suited to them.

Several Danes who then spent a great part of their lives in Greenland were men of high culture; they described the people with, for that time, exceptional thoroughness and perspicuity, so that the Greenland and especially the South Greenland Subarctic form of Eskimo culture was in the literature established as the type of the Arctic mode of living.

These authors were HANS and POVL EGEDE, missionaries; OTTO FABRICIUS, clergyman; and DAVID CRANZ, Moravian Brother. A more vivid and impressive description of the Eskimo spirituality than that which POVL EGEDE has given in his "Reports on Greenland" must be searched for, and a better ethnographical account of the Eskimo implements and their use than that given by FABRICIUS is hardly to be found even today. Finally, DAVID CRANZ, in his "History of Greenland" written in German, has contributed to make the Eskimo and their individual culture known to the world at large.

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<sup>1</sup> CARTWRIGHT, pp. 1 sqq.

For all later travellers and portrayers of Eskimo culture the representation of the Danish Eskimo was the starting point, and naturally their first endeavour was to find conformity with these, and to point out the cultural unity of the Eskimo. CRANZ proved that the Labradors were of the same people as the Greenlanders, and at the same time drew attention to the quite corresponding descriptions given by Russian travellers of the inhabitants of Bering Strait, which even in 1618 had been navigated by DESCHNEV, and again in 1728 by BERING.

From 1734, after BERING's last journey, a large number of Russian adventurers whose only object was to turn to account the wealth in furs, streamed to the Aleutian Islands and the nearer American Islands south of Alaska. With great daring these, to a great extent, un-nautical people undertook the sea-route from Ochotsk to Kadjak, the geographical position of which they were incapable of reckoning. In order to get the islands charted, and navigation set in order, the Russian government, after 1764, frequently sent out Naval officers, whose reports, however, got no further than the government offices in Petrograd. By degrees the Russian discoveries extended along the coasts of Norton and Kotzebue Sounds, and certain expeditions went to the interior of Alaska. Besides their activity on the Aleutian Islands and in Kadjak, which in 1798 became the seat of "the United Russian-American Co.," the Russians founded the more northern trading station St. Michael in Norton Sound; but the literature had all the while to be content with the rough descriptions given by individual mariners like Cook and LANGSDORFF.

Not until towards the middle of the 19th century did more explicit accounts about the inhabitants of the Alaskan coast and the Aleutian Islands begin to arrive. VENJAMINOV, to whom WRANGEL gave the honourable title of "the second Egede," worked during 1824—38, but at that time the Aleuts and the Eskimo had already been for a hundred years under destructive influence, and much of their individuality had been lost. In 1839 WRANGEL's account of the colonial conditions in Russian America was published. In 1852 the hydrographic department of the Russian Admiralty communicated important extracts from LEVASCHEV's diary for 1764—69, and at the same time ERMAN's Archive brought the most important parts of other older reports of travels.

In this manner ethnographical authors like HOLMBERG and DALL got the necessary material for their studies and descriptions of the Eskimo culture furthest west. The first result was the establishment of the similarity of the culture in question to the well-known South Greenland Eskimo culture. The same skill in the handling of the water-craft, and the same kinds of implements and hunting methods being found in Greenland as in South Alaska. On the strength of

these similarities one without further ado established the cultural unity of all Eskimo groups in the Subarctic form of culture, inasmuch as the extremes were known and not much heed was paid to the interjacent Arctic districts, where it was taken for granted that the same culture would be found in a poorer and more straitened form.

One started with the understanding that the Eskimo were typical inhabitants of the coast, who in a pronounced degree sought their living on the open sea, and, for the rest, this has been the prevailing conception until the present day. One of the objects of this work is, however, to show that this conception is greatly deficient and one-sided: the cultural conditions with the Arctic Eskimo tribes must be elicited for further elucidation.

Of all problems, that of the origin of the Eskimo culture cannot be solved without paying necessary regard to the Eskimo culture in its purely Arctic form.

Hitherto, most of the investigations in the origin of the Eskimo culture have rather aimed at finding out the descent and relationship of the Eskimo population proper, inasmuch as one has relied on conditions of race or on the linguistic conditions, or on some cultural feature bearing a distinct stamp, as, for instance, the kayak, throwing-board, etc. It has been taken for granted that a proving of the descent of the population also explained the origin of its culture, which is, however, by no means the case.

It has been directly inviting to start with the race-type, as the Mongolian race-type is so unmistakably present amongst the Eskimo. To deduce, without more ado, an Asiatic origin from this fact will not however be possible, as the Mongol-type is not decidedly predominant amongst the Eskimo; certain groups, namely in the central districts, remind us much more of the Indians than of the Mongols. Finally, beside with the Eskimo the Mongol-type occurs also with Indian inhabitants in the North-western parts of North America. This distribution seems, then, to speak mostly in favour of the Mongol-type having at a secondary stage, come to North America, and having been spread in some way or another, either by joint immigration or by infusion of small driblets.

Nor has a consideration of the linguistic conditions given any standpoint for deciding how the Eskimo came about, because, as already mentioned, the Eskimo language stands isolated. Some have maintained that this Eskimo family of languages, according to its structure, must be placed together with the American family of languages, or go into a larger group together with these. This was the view even of PRICHARD and GALLATIN, and later RINK, D. G. BRINTON and several others. Some, on the other hand, separated the family of languages from North America and associated it with North-east Asia, inasmuch as they have placed it together with the language

of the Palæasiatic in the so-called hyperborean group; this applies especially to language systematists like FRIEDERICH MÜLLER and F. N. FINCK.

That the cultural development of a tribe must be kept sharply distinct from its linguistic history and from its anthropological career has not always, or more correctly has seldom, been realized. These widely different matters have frequently been inquired into as one, without distinguishing between them, and on the whole no end of theories as to the descent of the Eskimo have arisen. Attempts have been made to locate the place of their origin in no less than three continents.

The views as to their origin may conveniently be divided into three groups. The first connects the Eskimo with the palæolithic tribes in Europe or America during and after the glacial period. The second makes them descend from Asia, and endeavours to explain their appearance in the Arctic regions in connection with historical events amongst the Mongols. Finally, to the last group, fall all the attempts to solve the problem by absorption in the ethnographical conditions.

The foundation for the assumption that the Eskimo descend from the palæolithic inhabitants of Europe is the discoveries made in the river-basins and caves of Northern France of bone implements, which call to mind Eskimo fish-spear-heads of bone, together with carved bone figures of reindeer for example, which likewise resemble Eskimo carvings. Special stress has been laid on the finding of indubitable harpoon-heads of bone; but in consequence of this, attention must be drawn to the fact that the counterparts of the appurtenances of bone spigots and peculiar heads of the essential Eskimo harpoon have never been found. The discovered heads of bone with barbs on one side or on both sides are made according to a principle to be met with all over the world. It is only because the material is a common one that they resemble the Eskimo heads in particular. To the account of the material and the related natural conditions and experiences must be written down the other similarities which it was thought would be found between palæolithic remains and Eskimo articles. Eagerness to find congruities has gone so far that it has led to a wish to find spiritual relationship between the Eskimo and palæolithic Western Europeans, in that it has been thought possible to substantiate that they both evince the same remissness towards the dead. Naturally this is a step forward amongst the vague conclusions. For geographical reasons alone, this theory seems to present itself as an impossibility, which has also been proved; but, nevertheless, it on and off appears on the surface.

The idea that the Eskimo are direct immigrants from Asia

cropped up at a very early date. Even DAVIS<sup>1</sup> touches on it, and today it finds advocates. The fundamental reason for this is, besides general impression, partly an ingrained mistrust in America being a domain productive of culture, and partly the conceptions of the independence of the Eskimo and their culture as opposed to the other North Americans. Added to this is, that so long as the enigma of the descent of the Eskimo stood side by side with numerous other Arctic mysteries, undreamed of possibilities of a suitable route of immigration could be hoped for. So long as the theory of an open sea round the Pole, or the presence of Polinians, had a warm advocate in such an authority as PETERMANN, it is not strange that no one dared deny the possibility of some day coming across groups of Eskimo, or new travelling tracks, in the polar regions not yet explored. C. R. MARKHAM<sup>2</sup>, in a lecture delivered in the Royal Geographical Society in London 1865, encouraged Polar expeditions on the strength of there being a possibility at every Polinia of meeting human beings who live on seal and walrus-hunting. As regards the possibility of the existence of Polinians, he referred to PETERMANN.

In the meantime knowledge about the Arctic lands increased, and since FRITHIOF NANSEN, with ingenious eye and energy, has set foot upon the two most obscure regions, the Arctic Ocean and the inland ice of Greenland, and thrown conclusive light on both, the mysticism which was associated with the Arctic anthropogeography has vanished, and calm investigation can prevail.

The first to form a complete theory on the emigration of the Eskimo from Asia was CRANZ<sup>3</sup>, who, taking it for granted that not until the 14th Century did the Eskimo immigrate to Greenland, from this draws the conclusion that their arrival in the Arctic region is, on the whole, of very late date. As, next, he thinks to have found physical and linguistic relationship with the Kalmucs in Asia, he assumes the Eskimo to be a branch of this tribe, which, during political disturbances in Tartary before the birth of Christ, has separated and wandered North-east across Bering Strait to America.

A hundred years later this theory gained renewed honour and dignity through MARKHAM's adoption and fashioning of it. As mentioned above, he shared PETERMANN's belief in the "Polinians," and the discovery of the Smith Sound Eskimo seemed to him to promise the possibility of new discoveries of unknown tribes. Then came the discovery by the English North-west Expedition of numerous, but certainly deserted, settlements on the southern coasts of the Parry Islands, and here it was striking that none was found on the opposite

<sup>1</sup> DAVIS, p. 18.

<sup>2</sup> MARKHAM, I, pp. 87—99.

<sup>3</sup> CRANZ, pp. 333 sqq.

coasts on the south side of the series of sounds which extend from Lancaster Sound to Banks Strait<sup>1</sup>. The English naval officers who navigated Lancaster Sound and its continuation started with the belief that the southern side must be at least as suitable as the northern side, and many of them, like SHERARD OSBORN, concluded that the dispersion of the deserted settlements indicated an immigration from the west along a route which lay several degrees more to the north than the north coast of America. OSBORN imagined the district round Cape Schelagskoj (about 170° E. long.,) on the north coast of Siberia to be the point of their departure, and supported this, amongst other things, with a Chukche legend reported by WRANGEL about a people which had gone northward to an unknown land. Across unknown groups of islands this people was said to have reached far north, where a deep and never navigated ocean causes a milder climate and, with it, conditions for more affluent existence<sup>2</sup>. From the northern station they followed the southern side of the Parry Archipelago to Smith Sound and Greenland without, however, getting any knowledge of their kinsmen on the north coast of the mainland, who, like another stream of emigrants, are thought to have likewise started from Asia along the north coast of America parallel with the more northern stream.

This theory obtained an ardent promulgator in C. R. MARKHAM, who supplemented it with CRANZ's old idea that the Eskimo migrations should be attributed to political disturbances in Central Asia. He imagined the Eskimo as originally living from Cape Schelagskoj to Bering Strait, whence, it was supposed, they had been ousted by pressure from the south along the two mentioned routes. He gets at his date by comparing the year 1349, which he supposes to be the year for the immigration to Greenland, with the Mongolian wars of conquest in Asia. During the centuries which preceded their first known appearance in Greenland, there was great unrest among the people of Central Asia. TOGSUL BEG (c. 1050), DSCHENGISCHAN († 1227) and other lesser chiefs led forth large armies bent on conquest. The pressure exerted by these penetrating waves on the tribes of North Siberia drove them further towards the north, and this led to the forced emigration of several tribes. The ruins of houses on Cape Schelagskoj indicate the beginning of the long wandering<sup>3</sup>.

This theory considered spontaneously may be enticing. In other respects it was soon thoroughly confuted by W. H. DALL<sup>4</sup>, who was a supporter of RINK's hypothesis. As a matter of fact it has played an important rôle, and may yet crop up again, either in full or in

<sup>1</sup> cf. the maps by BOAS, IX and MARKHAM, I, p. 87.

<sup>2</sup> OSBORN, I, p. 260.

<sup>3</sup> C. R. MARKHAM, I and II.

<sup>4</sup> DALL, VI.



part. Thus, K. HASSERT considers it probable that the Eskimo "in rapid flight have hurried through, and not again set foot on," the Parry Archipelago. E. ASTRUP furnishes us with a new variation, as he is of opinion that the Eskimo from Siberia have crossed the New Siberia Islands and numerous presumed groups of islands to North Greenland and Smith Sound. Quite recently W. THALBITZER<sup>1</sup> has again referred to MARKHAM's theory in support of his own view that the Eskimo once lived west of Bering Strait, and from there have wandered towards the coast.

Herewith we leave this theory, which obtained its greatest importance by having such a famous exponent as C. R. MARKHAM. In the following pages an account will be given of what one hitherto has thought it possible to conclude about the origin from ethnogeographical facts. He who did the first, and even to day, most important work in this domain was H. RINK. After having pointed out, as mentioned above, that the Eskimo culture must have one and the same origin, independently of the home of the race, RINK sets up two general maxims before establishing any proof as to where the home of the culture may have been situated.

He starts at once with the idea that the culture has originated under similar climatic conditions and under the same distribution of land and sea as nowadays, and he nextly assumes that the Eskimo wanderings from the south have taken place through the interior of the country outwards to the coast, along rivers, and not from a more southern stretch of coast to a more northern one. RINK has, as will appear later, come to a right conclusion in his last mentioned remark, and this conclusion is founded on the fact that the tribe's enjoyment of economic culture "with the settling on the Polar coasts must have undergone a change which was rather abrupt and also must be supposed to have extended to the entire tribe, and therefore that the people did not live scattered as they do now, but so united that a certain cohesion, and the necessary intercourse, could take place. But this is not consistent with a wandering along the coast which more or less suggests the idea of a successive line of advances."

RINK is undoubtedly right, also, in assuming that the geographical conditions have not greatly changed since the Eskimo culture was fashioned. Geologically it may be concluded that this must have taken place during the latest geological period, or after the glacial period<sup>2</sup>. The linguistic homogeneity is evidence of a comparatively recent dispersion, and the purely historical fact that the distribution over the west coast of Greenland was not accomplished till from the 11th to the 14th centuries is perhaps also to be understood as a proof that it is comparatively young. When one compares the

<sup>1</sup> M. o. G., Vol. 39, p. 717 and same page, note 1.

<sup>2</sup> cf. A. HAMBERG.

rapidity with which cultural development and racial propagation can take place with the many times slower speed with which alterations occur in the earth's history, one may surely draw the conclusion that great alterations cannot have taken place in the climatic or geographical conditions since the days when the Eskimo began their migrations, and any eventual, periodical oscillation of some metres in the level of the land or of some degrees in temperature would play no encroaching rôle.

According to RINK, the Eskimo originally were an inland people, and lived by fishing in the rivers, and he founds his opinion on LEWIS H. MORGAN's comments on the mode of living of the primitive Americans. For the rest, this author regarded the Eskimo as having immigrated from Asia. RINK next imagines that either by expulsion or a general shifting from the interior the Eskimo were forced out to the sea-coast, where, in accord with their former custom, they supported life by fishing and hunting, until, little by little, the peculiar Eskimo culture fashioned itself. Not until it had adjusted itself to conditions of life at the coast did a tribe begin to disperse along the Arctic coasts.

Per se, RINK considers that this development into inhabitants of the coasts at the mouth of a river might just as well happen in Asia, where there also are rivers which abound in fish and debouch into the Arctic Ocean, as in America; but on account of the shape of the head, the language, the legends and various cultural conditions of the Eskimo, he was convinced, however, that it had happened in America.

RINK was inclined to favour the idea of expulsion from the interior by a hostile tribe, as he could not otherwise explain what could induce the Eskimo to undertake such a radical change in their culture, which can only be thought of as being carried into effect by cultural supplies from without, or by the influence of changed natural surroundings. As the first possibility, in this case, is quite inconceivable, one must fall back on the latter, and it must have been a powerful and encroaching alteration which took place, since it has been able to compel a slow and primitive people like the Eskimo, itself to transform its culture so thoroughly in all directions: "When one considers the often mentioned stagnation, or extremely slight change in the conditions of culture, which the Eskimo have been subjected to during the period of about 1000 years since the Europeans have begun to know of them, it is obvious that quite special circumstances must have egged them on to activity at the time when they trained themselves to be what they now are."<sup>1</sup> RINK believed, however, that when he got the Eskimo chased away to the mouth of

<sup>1</sup> RINK, IV, p. 219.

a river and held there by the pressure of hostile tribes he had the forces which were to foster the new culture set aright. His first and most important claim to this belief was his view that the kayak was the kernel of the Eskimo culture in implements, or that, which by its making led to the invention which had by degrees to drag all the others after it. RINK supposed the primitive form of the kayak to have been an Indian birch-bark canoe. The first step towards the Eskimo culture, therefore, consisted only in replacing the birch-bark with sealskin, and at the same time in providing the skin-boat with a deck, in order to protect it against the waves of the sea. In this view RINK did not consider that so many other primitive peoples have used small boats on the sea without covering them, from which one may conclude that, with the advent of the kayak, there were other factors which asserted themselves. RINK was, however, so convinced of the sole validity of the South Greenland or Subarctic form of culture that he started by understanding that, where he found this form in its simplest and apparently most primitive stage, there the place of origin must be. And then he thought, just at a place which fitted in excellently with the rest of his reflections, namely round the mouth of the Yukon in Alaska, to find Eskimo who rowed the kayak with a single-bladed paddle, and did not use the waterproof pelt for kayaking. Here, then, he placed the hearth of the Eskimo culture, and thought to be able to point to a steady development from here to South Greenland, where he believed that the culture reached its culminating point. He tried in several particulars to prove this succession of development. Full confidence in the use of the kayak could only have been attained in Greenland. The double-bladed paddle first appeared around Point Barrow. In South Alaska the bladder-dart was used for seal-hunting, and it was only further north that the idea of separating the bladder from the dart and joining these two with a cord had been thought of. The harpoon first attained its most ingenious form in Greenland. In South Alaska the houses had the same form and arrangements as the Indian ones, and further to the north appeared, by degrees, houses with special Eskimo accommodations and blubber-lamp instead of the hearth. In Alaska the Eskimo still wear lip-ornaments, but when they migrated northward to the Arctic regions they had to discard this adornment on account of climatic conditions. Also in apparel, skill in craftsmanship, and social conditions an apparent development is affected from Alaska to Greenland<sup>1</sup>, and RINK thought, besides, to find support for his views in the contents and distribution of various legends.

In the various works where RINK treated the subject of the Eskimo he cleared the way by his sound reflections for the calm

<sup>1</sup> RINK, VIII, pp. 6 sqq.

study of the Eskimo culture and its origin, and by his own theory as to the origin, which was supported by multifarious arguments, he dragged the question down to earth, and established America as being its home, and pointed out the way which further investigations must follow. Since the publication of his important work "Eskimo Tribes," his theory has held a strong position in the scientific world, in spite of the criticism which has been directed against it, especially by MURDOCH. Meanwhile it is not difficult to substantiate that RINK's line of argument is wrong, and MURDOCH<sup>1</sup> showed, also, how RINK was mistaken in pointing to a succession of developments from Yukon to Greenland. Neither with respect to the structure and use of the kayak, the distribution of the paddle and bladder-dart, nor the gradual alteration in the form of the houses did RINK's assertions accord with reality. The use of lip ornaments had not been discarded northwards on account of the frost, as they have been found right up to Cape Bathurst, where the use of them stopped, owing, in MURDOCH's opinion, to lack of connection with the East Eskimo. RINK has quite overlooked the fact that immediately south and north of the Yukon Delta are found kayaks which are just as well built as amongst the South Greenlanders, and are rowed with a double-bladed paddle with just as great dexterity. That there is no regular succession in house-building I have elsewhere had opportunity to point out<sup>2</sup>.

In spite of these various errors, there are some who think that RINK may, nevertheless, be right in the main, and that Alaska is, all the same, the home of the Eskimo culture. The rest of the Eskimo inhabited coasts, on account of the poverty-stricken Arctic nature are of so barren a character that many people involuntarily think that Alaska with its somewhat richer resources and its more varied population, where it is easy to think of shiftings taking place, must be the natural source of origin. And that, since the original source of the culture is laid there, it may finally be assumed (as BAHNSON<sup>3</sup> assumes) that the main tribe of the Eskimo has gone along the coast of the mainland, while a branch has spread itself over the Aleutian Islands. Linguistically, the Aleuts are, if any thing, co-ordinate with the Eskimo, and their Eskimo culture is, as I shall try to prove further on, only a loan from their neighbours.

Of the arguments advanced by RINK in favour of his theory, there yet remains to be mentioned that by which he sought to support it along the paths of folk-lore, taking it for granted that the Greenland legends containing historic matter had not arisen in the course of time, but at a definite period, which must, as nearly as possible,

<sup>1</sup> MURDOCH, II.

<sup>2</sup> Eskimokulturen, 1905 and M. o. G., Vol. 34.

<sup>3</sup> BAHNSON, Vol. I, p. 228.

correspond with that in which all the rest of the changes in the condition of culture took place. After having proved, then, how the Indians, and even certain tribes, play a rôle in many Greenland legends, which he regards as being just as old as the migrations along the north coast of America, he apprehends this as proof of his theory regarding the migrations of the Eskimo. There is, however, much to be said against this view. The presence in Greenland of the legends in question can just as well be explained by their having strayed at a late date, and by verbal communication, from group to group. Nor is such immense age as RINK assumes, which has to be reckoned in centuries, compatible with tribes having such inferior social stability and differentiation. But, for the rest, it is a side of the question which lies apart from the present task, and, therefore, will not be discussed further.

Here, on the other hand, it has to be stated that the well-known American ethnologist, F. BOAS<sup>1</sup>, like RINK, has tried by the employment of legends and linguistic material to determine the reciprocal connection and original travelling tracks of the Eskimo groups. Along these lines he follows up the intercourse between the individual groups within the East and the West Eskimo. Thus, the Eskimo term for "white man" is the same with all the East Eskimo, and BOAS thinks that he is able to connect the origin of this term with a legend which was generally disseminated before the Eskimo became acquainted with the Europeans. As regards the Eskimo migrations, he also assumes that the question could be solved by a complete study of the language and traditions. "From the facts already known we arrive at the conclusion that the more ancient forms of customs and traditions are found west of Baffin Bay. In this way we are led to conclude further that the Eskimo migrated by way of Baffin Land to Greenland and Labrador. The natives of Labrador and of the south coast of Baffin Land believe that the events told in their traditions occurred in the far north. Those of Fury and Hecla Strait point south and south-west to the American continent. The Western Eskimo refer to the east as the place where their heroes performed their exploits. Therefore, it seems probable that the lake region west of Hudson Bay was the home of the Eskimo. We find their remains in the most northern parts of the Smith Sound region. At the present time the East Greenlanders and the West Greenlanders are very different from each other. Therefore the probability is that the immigrants separated in Smith Sound, and that one part went south while the other turned north-east, and thus reached the east coast. A decision of these questions must be postponed until the ethnology of the Eskimo is more thoroughly studied." Yet it is interesting to note that BOAS here indicates quite

<sup>1</sup> BOAS, III.

a new direction as the point of origin for the Eskimo. His showing that the legends with the two groups of Eskimo point inwards towards the centre is a very important matter.

After contemplating the conditions of culture, MURDOCH<sup>1</sup> has formed a theory as to the descent of the Eskimo, which agrees with the result of BOAS's investigations. After having carried through his criticism of RINK, whereby he shows that from a cultural point of view there is nothing which speaks in favour of Alaska as the native land, Murdoch formulates his hypothesis, which, he says, is probably quite as correct as RINK's. It is his opinion that the central tribes and not the Yukon Eskimo possess the most primitive culture, and therefore they are nearest to the original home of the race, which was not the interior of Alaska but the district south of Hudson Bay. Here a part has separated, and streamed into Labrador and populated it, while the main body has gone northwards along the west coast of Hudson Bay to take possession of the Arctic Archipelago, and finally to reach Greenland via Smith Sound, leaving as a trace of their wanderings the house-ruins and other relics which are now found far north of where the Eskimo are at present stationed on the western side of Baffin Bay. From the original home — evidently before the Labradors separated — another large section went northwards along lakes and rivers, always keeping to the east of the Rocky Mountains, until they could pass westwards along the Yukon basin. Here they again divided, one section going down the Mackenzie in order to disperse towards the west as far as Bering Strait and Asia, while the other section went down the Yukon and the Kuskokwim and dispersed along the coast; where, towards the south, it became more and more changed on account of the new and peculiar surroundings. It will be seen that, according to this view, the people in South Alaska are not primitive, but highly specialized, Eskimo, who have brought with them to a relatively fertile and temperate district accomplishments which germinated under widely different circumstances.

What is interesting in these remarks of MURDOCH is that he, like BOAS, locates the primitiveness in the central districts. While RINK, for whom Eskimo culture was the Subarctic sea-coast form, only counted on the central Arctic districts as the necessary complementary and connecting link between east and west, MURDOCH, in consequence of his long stay at Point Barrow, had his attention directed to just the Arctic Eskimo groups. His hypothesis as to their migrations, itself, is not so satisfying, however, in comparison with BOAS's and RINK's calm and penetrating understanding of the shifting of peoples, in that MURDOCH is rather too free in his chapters on the treatment of the wanderings of the ancient Eskimo.

<sup>1</sup> MURDOCH, II.

Several other authors who have touched upon the question of the origin of the Eskimo culture have either concurred with one or another of the mentioned theories, or have expressed themselves from a special point of view.

In order to throw further light on the Eskimo constituting a link in the whole North American body of people, G. HOLM has collected several congruities in legends and implements with Greenlanders, Aztecs and Mayas. He chose to search far from the border districts, just in order to disarm the assertion that the congruities might be due to the contact of the peoples. The congruities in the use of the throwing-board, missiles, and salmon-spear, which HOLM points to, are certainly common to all North Americans, and can only be apprehended as a good argument to prove how deeply Eskimo culture is rooted in America, and it is conceivable that the same holds good as regards some of the principles of the legends.

WALTER HOUGH, starting with the idea that Eskimo life is dependent on the blubber-lamp, investigated the conditions pertaining to the origin of this, and through this tried to decide where the hearth of the culture was, whereby he came to the conclusion that it must have generated on an Arctic coast.

D. G. BRINTON<sup>1</sup> thought that the question of the origin of the Eskimo should date back to a time when climatic conditions were different. They then lived on the Atlantic coast, as far south as Delaware River. "It is not improbable that their ancestors lived on the swamps of New England, when the reindeer grazed there, and accompanied this animal when it finally strayed northwards. They pertain historically and characteristically to the Atlantic people." By this BRINTON means that they rank with the Iroquois, Algonquins, Beothuks, and Tinne people. And it is on the basis of this consideration that he gives preference to the hypothesis of his countryman, JOHN MURDOCH, and maintains that the regions south of Hudson Bay are the point of origin for the Eskimo.

Of additional importance as regards the question of the origin of the Eskimo culture are F. BOAS's publications of the results and investigations of the Jesup Expedition. These investigations, and especially the mythological ones, confirm the above-mentioned view of BOAS that the western Eskimo have come from the east and have cut an old communication across Bering Strait. As JOCHELSON expressed it: "There is no doubt that the Eskimo appeared on the American-Asiatic coasts of Bering Sea as an entering wedge which split apart the trunk of the common mythological tree."

In his latest great work "The Ammassalik Eskimo" THALBITZER (p. 917) expresses the opinion that "the common Eskimo Mother-

<sup>1</sup> BRINTON, I, pp. 59 sqq.

group has at one time lived to the west of Bering Strait and has arrived here from the coasts of Siberia." I must take it for granted that THALBITZER means the north coast of Siberia. But, as will be seen from the following, I cannot follow him as regards this point. I do not doubt that it will ultimately be proved that the Eskimo originally came to the regions around Bering Strait from the north-east, along the north coast of Alaska.

Even here, however, I can refer to my preliminary paper of 1905 on this subject, where I tried to show that all anthropo-geographical circumstances favour the belief that the Arctic Archipelago of North America is the original home of the Eskimo culture. I pointed out Coronation Bay, in particular, as a district especially adapted to develop such a peculiar economic culture as that of the Eskimo. In the years which have since passed no weighty evidence has been produced to question the main points in my paper from 1905, viz., that the Eskimo culture is of Arctic origin and arose as an adaptation to the natural conditions in the Archipelago. Even the remarks set forth by A. HAMBERG have not great interest in this connection, as this author, in his paper, has not entered on the problem which I had treated, viz., the adaptability of the Eskimo culture to the geographical surroundings.

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### Views of Investigations Before Us.

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If one wishes to arrange the Eskimo in a cultural order of succession, and amongst the hunting peoples distinguish between the lower and higher hunters, one must necessarily place the Eskimo in the latter category.

No doubt there are many authors who rank the Eskimo amongst the lower hunting peoples, but these authors have not realized how rich and highly differentiated is the Eskimo inventory of expedients for the support of life. From the point of view of social and higher culture the Eskimo have only had opportunity for poor development. Owing to the difficult conditions of nature all their efforts are expended on procuring food, house, and clothes — three things which are all equally necessary in an Arctic climate.

In all these respects they must suffice for themselves. They must procure the material for their implements, houses, and clothes; each must for himself manufacture these things, and the maker must himself direct the development of his use of the hunting implements,



such as the kayak and dog-sledge, towards astounding dexterity. This falls to the lot of the man, but, at the same time, versatile calls are made on the woman's ability.

From a purely geographical point of view the Eskimo can be discriminated in various groups, but a form of tribe such as we know, for example, from the North American Indians only occurs as a rare exception in South Alaska. The sociological unity with the Eskimo is not in the tribe but in the settlement<sup>1</sup>, but at the same time it must be remembered that the latter is not stationary, there being a difference between its location in summer and winter, and both fluctuate, though with some Eskimo the winter settlement is almost stationary. Only in a slight degree do the conditions of descent, language, and the like, form a setting for the appurtenances of each settlement. Much more do their social, and above all, economic interests, maintain their unity.

The Eskimo settlements, or rather, perhaps, groups of hunters, are in an eminent degree self-sufficing groups. The Eskimo must himself procure all that is needful, food as well as material for tools, dwellings, and clothes. In themselves they bring along with them their traditional methods, learnt from their fathers, for the use of hunting implements and for the making of houses and clothes, etc.: but, for the rest, they are dependent on the surrounding nature and its products. This ground for their existence and for the higher features of their culture I shall call the economic culture<sup>2</sup>. Tradition and natural surroundings are the two determining factors for the culture. What is traditional and customary can be transformed either by something having been learnt from without (borrowed culture), or by an adaptation having taken place in accordance with the altered natural conditions (new adaptation).

With a primitive people like the Eskimo which is partly a remote border-folk and partly inhabits districts with distinct geographical characteristic features, it is natural to assume that new adaptation has played an important rôle in the origin of the various nuances of the Eskimo culture, and perhaps, also, in the birth of the culture itself.

What will be given in this work, then, will be an attempt to follow the adaptation or the direct dependence of the culture on nature by studying the relation between the conditions of nature on the one side and the conditions of culture on the other. Finally an

<sup>1</sup> cf. MAUSS et BEUCHAT, pp. 53 sqq.

<sup>2</sup> I prefer in this connection the expression "economic culture" to "industrial culture" or to the even more comprehensive "material culture", as I wish to express that it is just the basis of existence (especially the procuring of food), answering to the economic basis of the higher forms of culture, which will here be studied and pursued.

attempt must be made, by comparing the results gained hereby, to form a picture of the development.

Here a purely anthropogeographical problem is in question, in that we understand by anthropogeography the study of the geographical factors to which the culture has adjusted itself, and on which its existence is dependent. It is a well known fact that the geographical factors, or such circumstances, as, for example, the distribution of land and water, the form of the coasts, the conditions of ice, rivers and lakes, climate, and flora and fauna have a determining effect on human culture — above all on the underlying economic culture, and nextly on the higher and more complex conditions of culture, such as the community, the family etc. FRIEDRICH RATZEL was the first to bring all these subjects under a general view, and he created the term anthropogeography for that branch of the science.

Most authors are still content, however, to present the adaptation of culture to nature in its general features. We, however, must proceed in a more exact manner, and must divide the Eskimo domain into its individual geographical provinces, or into the natural geographical individualities, i. e., the smaller domains where the geographical factors must be regarded as homogeneous, and we must then find and present the typical stamp of the economic culture in each of these latter domains. This done, we shall try whether it is possible by comparing all these nuances in the Eskimo economic culture to ascertain which of them is the oldest.

In many respects the Eskimo territory is extraordinarily well adapted to be the subject of such anthropogeographical treatment, as; on account of its lengthiness and its alternations as regards the position of the coast, the geological structure of this, and the condition of ice, it is relatively easily divided into individual sections with natural borders. In the next place an otherwise so encroaching factor as the flora may be almost entirely excluded from these reflections, because the alimentation of plants plays only a slight but somewhat variable rôle with all groups, and wood, as material, must almost always be procured by special means (in the first place from drift-wood). Finally, as a result of the geographical peculiarity, consequent to the northern latitudes, that the animals are few in species but abundant in individual numbers, the only important means of earning a livelihood, hunting and fishing, is more methodically carried out than in the southern latitudes, where the physiognomy of the surrounding nature is less sharply defined.

Generally speaking, by "method of use" is meant those trained movements and actions which are bound up with the use of an implement. Such a "method of use" is a real cultural possession, inasmuch as familiarity with it is a demand which the primitive community makes on the single individual in order that he may be

recognized as a valid member. In the next place, the method of use, seeing that it is taught from generation to generation, is fully as much one of the continuous lines which run through the cultural life as is the form of the implements — the unbroken transition of which archaeology has proved empirically — and finally it is by that degree of dexterity and efficacy with which the methods of use are carried out that the cultural strength and soundness of the tribe is measured. One of the first injurious results of primitive folk, especially hunting people, coming in contact with Europeans shows itself in neglect of the training in economic methods, and a kind of proletariat arises which is incapable of procuring its food, and may be said to have neither the one culture nor the other.

This, however, is only the one side of the entity and ethnographical significance of the method of use. Besides their sociological independence, the methods of procuring a livelihood are intimately bound up with the conditions of nature, and an alteration takes place when the conditions of nature change. Such alterations do not occur spasmodically. But, from old forms of dexterity, confronted with new demands, a new method of hunting or fishing is slowly and cautiously developed.

According to this view, the use of the implements is, as has been stated, the central and fundamental factor in the material culture of a tribe, inasmuch as the meaning of the word "implement" is apprehended in a wider sense. And the trained, concentrated Eskimo methods, just on account of their sensitiveness to the conditions of nature on the one hand, and their value both to the individual and the community on the other hand, become very important subjects for study. They represent, so to say, dependence on nature, or that part of hunting humanity which unites natural surroundings with human culture. This view holds good generally, but the methods of use are most easily studied with hunting people like the Eskimo, with whom they appear in their purest form, and where the greater part of the culture is directly expended on the means for subsistence.

If one thinks of such a hunting tribe transferred from its native soil to a district, which in some respects presents changed conditions of nature, one knows that at first it will try to live in the old way, and that only little by little will the new conditions assert themselves and have an altering influence on their culture. And it is clear that it is through the methods of hunting and fishing employed that the influence takes place. At first the old known methods are employed, but by degrees new possibilities reveal themselves with some of the methods, while others, perhaps, die out; and while a revaluation and renewed development takes place amongst the methods of subsistence the implements follow suit, and shape themselves in

accordance with the demands of the new methods of subsistence. If it were possible to study such a transition of culture on the spot, it must be maintained that that of pursuing the continuity in the methods and dexterities would be the most impressive aspect of cultural development which could be given.

### Some Geographical Observations on the Eskimo Domain.

The purely Arctic regions inhabited by the Eskimo belong geographically to three different domains. Towards the west one has the coast of the mainland as far as Dolphin and Union Strait. In the centre lies the great Arctic Archipelago with the adjacent mainland coast, and finally towards the east, like an entity in itself, lies Greenland.

The coast of the mainland towards the west, which has an uninterrupted course without any groups of islands lying in front of it and is without many protected indentations, lies open towards the Arctic Ocean. The coast land itself, which is built up of new formations, is low, and descends evenly into the ocean, which frequently has banks and bars along the coast. The Archipelago consists of a confusion of islands and sounds, the charting of which is due to the English N.W. Passage expeditions and the Franklin search-expeditions, and, later especially to those of GREELY and SVERDRUP. Two waterways in particular are to be remarked, both of which intersect the Archipelago from east to west. The northern is formed by Lancaster Sound, Barrow Strait, Melville Sound, and Banks Strait, which together separate the Parry Islands towards the north from the more southern series of large islands which sometimes are called by a common name after FRANKLIN, and which consist of Baffin Land, North Somerset, Prince of Wales Land, Victoria Land and Banks Land. Along the south side of these islands runs the southern water-way, or North-west Passage, which follows the mainland, and consists of Hudson Strait, Fury and Hecla Strait, Bellot Strait, the waters round King William Land, Dease Strait, Coronation Gulf together with Dolphin and Union Strait. The two passages are connected by four straits, of which especially is to be noted Mc. Clintock Channel, which runs from north-west to south-east.

In contrast with the north-western coast lands the Archipelago consists of old formations. The large region of primitive rock in North-east America ceases at the west end of Coronation Gulf, and forms the southern portion of the Archipelago, for which reasons the

southern passage generally has high granite coasts, with reef and skerries. Along the north side of the primitive rock runs a belt of silurian formation, and afterwards, the further one goes towards the north and the north-west, are always newer palæozoic rocks. The east coasts of Baffin Land and North Devon are, however, essentially granitic, and face the other great region of primitive rock, Greenland. The climate is distinctly Arctic, having only two seasons: a short summer with open water, and a long winter when everything is congealed. As regards climate the Archipelago has retained much of the continental character of the mainland. In several places glaciers are found in the higher regions, but it does not seem that continuous masses of land ice cover any of the islands as they cover Greenland. Both in summer and winter north and north-westerly winds prevail. Of very great importance are the conditions of the sea ice, as the existence of the Eskimo is just as much bound up with the conditions on sea as with those on land. But in the Arctic regions, the sea is a very different element from the undulating billows of milder zones. Only during a couple of months in the summer, and in the most favourable areas is it sea in the ordinary sense of the word. The greater part of the year it is ice-covered and solid; but even this is not all, because only in a few places is the sea allowed to freeze smoothly as a lake does with us. Wind and current frequently drive masses of loose blocks of ice or pack-ice in towards the coast, whereby the newly formed ice is broken up, and the surface of the sea becomes rough and impassable, when the blocks freeze together in a coherent conglomeration. Only in the most protected, remote straits and among the skerries are formed the smooth ice-surfaces which are called winter-ice in contradistinction to pack-ice, which may consist of blocks several years old. With the winter-ice, which breaks up every year, must not be confounded the, in places, perennial icefoot which in many places follows the coast, and forms a smooth and safe path for travelling by sledge. In this connection the question of whether the pack-ice originates as glacier ice or as sea ice is of very small importance. The size of the blocks is only of significance in so far as regards the greater or lesser force with which they press forward, or, in the case of their stranding on bars somewhat off the shore, form a barrier in front of deep coast waters, over which the winter ice can form. The latter happens at the north-east coast of Baffin Land, and especially at several places between Bering Strait and Point Barrow.

The conditions of ice at Greenland are well known. On the west coast the winter ice lies only on the innermost waters, whereas north of Egedesminde it may lie further out to sea; and, as a rule, in North Greenland it is only in the month of July that it entirely melts away. It is from the drift-ice that Greenland gets the Polar sea-ice,

"Storisen," which by the Polar current is carried along the east coast, rounds Cape Farewell, and blocks the west coast till about  $64^{\circ}$  N. lat., together with the west ice which comes from the ice-filled sounds in the northern part of Baffin Bay, and in the spring months reaches as far down as  $66^{\circ}$ — $69^{\circ}$  N. lat. On the north and north-west coasts of Alaska and round the mouth of the Mackenzie, masses of Arctic Ocean pack-ice lie close in to land, and prevent all intercourse except on the smooth ice across the level innermost ice over shallow water, which is used in the spring by the Eskimo when travelling by sledge from Point Barrow and Colville River to the mouth of the Mackenzie. Only for a couple of months does the ice withdraw and leave a narrow open water-way between the land and the pack-ice. Of especially great extent is the open sea west of Point Barrow, where the edge of the pack-ice in August generally lies north of  $70^{\circ}$  N. lat., as it also does off the mouth of the Mackenzie where the warm river-water evidently plays some part.

In the Archipelago the conditions of ice must be treated with especially great caution, as the waters and currents are so complicated, and because no one has yet tried to give a collective description. The known conditions, which can be taken as a starting point, are the grouping of the islands, the prevailing north-west winds, with the open waters, which have been substantiated several times by English sailing expeditions.

A glance at the map shows with certainty that the ice-masses can come only from the north and north-west, and on account of the north-westerly winds there must be pressure in the direction of the south and south-east. Through Smith Sound and the confusion of straits between Sverdrup Islands and Parry Islands the above mentioned west ice stretches out into Baffin Bay, but that this and, on the whole, the pack-ice in the eastern sounds of the Archipelago are so comparatively inferior can only be due to the protecting islands. In the summer numerous expeditions have passed through Lancaster Sound and Barrow Strait. JOHN ROSS and MC. CLINTOCK went south through Prince Regent Inlet and along the east coast of North Somerset and Boothia Felix. JOHN FRANKLIN must either have passed this way and through Bellot Strait, or through Peel Sound and Franklin Strait to the south-east end of Mc. Clintock Channel, where his ships were crushed in the pack-ice on the west-coast of King William Land. A few years later MC. CLURE and COLLINSON sailed in two ships from Bering Strait. COLLINSON sailed his ship to Dease Strait and extended his investigations to Victoria Strait, west of King William Land, but returned when he saw that he could not advance further on account of the pack-ice. A year afterwards, he went up to the north end of Prince of Wales Strait, but the pack-ice again blocked his way. A year previously, MC. CLURE had been stopped at the same spot in Prince of Wales

Strait, and when he tried to take his ship west of Banks Land he had to leave it on the north-west coast of the island.

Right through the Archipelago, and following the direction of the wind from north-west to south-west, runs a fairly broad water-way, Banks Strait, which has for continuation Mc. Clintock Channel, through which no ship has ever succeeded in passing; as it is always, winter and summer, found blocked with pack-ice, or, as it is often designated on English charts, hummocky ice.

Towards the north-west, Banks Strait is open to the Arctic Ocean. Towards the south-east the Mc. Clintock Channel behaves almost like a blind alley, inasmuch as it is continued only in the narrow waters round King William Land. It can be understood, then, how the north-west wind presses the masses of drift-ice together in this little water-lane, which has shown itself to be the most effective obstacle to the navigation of the North-west Passage. Mc. CLINTOCK, who also found it unnavigable by ship, thought, however, that it would be possible for a ship to pass through Bellot Strait and Franklin Strait and then south-east round King William Land, through Ross Strait and Simpson Strait, and further west to Coronation Gulf, and AMUNDSEN's Gjøa Expedition realized the thought of navigating the more southern North-west Passage.

Another peculiar feature which has proved to hold good in these Arctic regions is that the conditions of ice on the eastern coasts invariably are more unfavourable than on the western coasts. This manifests itself sharply on the east coast of Greenland as compared with the west coast, where in Smith Sound, the ice-laden current directly follows the coast of Ellesmere Land, while the coast opposite is free, as is also the case in Bering Strait, where exactly corresponding conditions exist.

The Arctic flora is of such slight determining importance to colonisation that it is unnecessary to dwell upon it. Hardly anywhere do the berry fruits and the few other edible vegetable substances have any influence on the site of the settlement. And as it is not able either to yield any wood for implements, the occurrence of drift-wood is of greater anthropogeographical importance<sup>1</sup>, even if, in reality, there are many places where considerable quantities of berries are gathered and eaten.

All the more attention must be paid to the fauna, and especially the aquatic mammals. Of the land mammals the reindeer is most important, in that it has the widest distribution, and is hunted by the majority of Eskimo tribes, with the exception of those in the very south of Greenland and Alaska where it is no longer found, as formerly

<sup>1</sup> As to supply of drift-wood to the Arctic Ocean compare map, Vol. I in P. C. SUTHERLAND, *Journal of a voyage in Baffin Bay, etc.*, 1850—51. London, 1852, Vol. II.

it was hunted by the Polar Eskimo with whom the method of hunting has been forgotten. The reindeer everywhere wander to the coast in spring and autumn, and back again to the interior; and of special interest are these migrations across the Rae and Boothia Isthmuses, across Simpson Strait as also the narrow Straits at Coronation Gulf, where the herds of reindeer in the spring go northward across the ice, and return in the Autumn. Corresponding migrations of the musk ox, though in an inferior degree, may have been observed across the isthmuses, but for the rest the musk ox is a more distinctly settled animal, which keeps to a definite district. The former idea that the meat of musk ox is not appreciated by the Eskimo is entirely wrong. The meat of the musk ox is actually preferred to that of the reindeer, which is generally mentioned as the favourite food of the Eskimo, and all those tribes which live in the vicinity of musk ox districts carry on the hunting of them with the greatest zeal. Another thing is that the diffusion of the musk ox is confined to the Barren Grounds, the Archipelago (with the exception of Baffin Land and Southampton Island), and the north coast of Greenland from the Humboldt glacier to Scoresby Sound (cf. M. o. G., Vol. 34, p. 401: map showing the distribution of musk ox). Of other terrestrial animals the hare, which in some places is snared, plays a rôle in the support of life, while the Polar fox provides material for clothing, and the wolf, which in the places where it occurs in large numbers may have a decimating effect on the reindeer stock, is regarded as an enemy to be exterminated either by might or sleight.

At the transition between terrestrial and aquatic animals stands the Polar bear, which also, in some places, has some economic value for the Polar Eskimo, for whom, for example, it affords material for the specially warm clothing which these people need during the winter; but it is of even greater value in that it gives the Eskimo the opportunity to display their courage, and gives full play for their sportsmanship, besides playing an important rôle in the folk-lore and psychology. On the other hand the economic basis for the existence of the Eskimo is seals, or more correctly, four kinds of seals: the Ringed Seal (*Phoca foetida*), the Bearded Seal (*P. barbata*), the Greenland Seal (*P. Groenlandica*), and the Walrus. The Greenland Seal, which, though it is of the greatest importance as regards South Greenland, is of minor importance, as it dwells only in the North Atlantic and does not visit the real Arctic waters; and where other districts are concerned, the same may be said of the walrus. Other kinds of seals, such as the Crested Seal at Greenland and the Fur Seals at the Aleutian Islands, likewise play a local rôle. Undoubtedly the occurrence of the Harbour Seal (*P. vitulina*) is general in Southern Arctic waters, but it is only in the most Southern part of Alaska that it is of great importance. Of the four first mentioned seals, the Ringed Seal and



the Bearded Seal are Arctic, or, as TORELL terms them "inhabitants of the Glacial Zone." Moreover they are circumpolar, and the Ringed Seal, in particular, is met with far down in the Temperate Zone. One has come across the Ringed Seal throughout the whole of the Smith Sound passage, and it seems that SVERDRUP's Expedition first proved its northern limit, which runs north of Parry Islands and in 90° W. long. to Grinnell Land. It occurs in quantities along the north coast of the American Continent and around Bering Strait as far as 60° N. lat. Its favourite abode is in long and deep fjords or inside skerries, where the water during nine months of the year is covered by smooth winter ice, and in such places it is found all the year round, sometimes in immense quantities. FABRICIUS<sup>1</sup> says of this seal: "The ice is its proper element, on which and in the presence of which it prefers to be. This, however, must be understood to mean the firm, flat ice, not the drift-ice, where it is seldom found, except on the loose pieces which calve out from the fjords." WINGE<sup>2</sup> says of the Ringed Seal that "it likes best to be where ice is lying; it prefers the firm, flat ice, and for this reason lives preferably in fjords which are frozen over during the whole year; it then, itself, pushes and scratches holes in the ice and the overlying snow, in order to be able to blow, or, in addition, to creep up to rest, or it helps itself by means of holes or cracks which appear during ebb-tide and flood-tide, or by the calving of the icebergs." In the spring it brings forth its young in a snow burrow, and, when the snow melts owing to the rays of the sun, creeps up on the ice to sun itself. Besides being caught by the commonly employed Maupok method, and, also, at the spring-hunting of the seals lying on the ice (Utok hunting), it is caught in nets in some places in Alaska, and, in recent times, has in many places been captured with firearms. While the quantities of Ringed Seal provide the Eskimo with nutriment and fuel, the Bearded Seal, which occurs in small numbers, is significant on account of its strong skin, because this provides material for thongs and coverings for boats. It is also a very northern form, which by preference keeps to the great surface of water outside the fjords. It is found at Greenland and in the Archipelago. MURDOCH<sup>3</sup> mentions it at Point Barrow. Around Bering Strait it is extremely rare, and, according to ALLEN<sup>4</sup>, it has never been seen at the Pribilof Islands. Like the Greenland Seal in South Greenland and Labrador it must be hunted for choice with a harpoon from a kayak. The walrus is the one seal which is most particular in the choice of its abode. It requires a not too deep bottom, with an abundant occurrence of testaceous animals, together

<sup>1</sup> FABRICIUS, IV, p. 82.

<sup>2</sup> WINGE, p. 432.

<sup>3</sup> MURDOCH, I, p. 56.

<sup>4</sup> ALLEN, p. 669.

with a special combination of current and ice. It is distributed over two localities, which have no reciprocal connection. According to NORDQUIST<sup>1</sup> and ELLIOT<sup>2</sup> the walrus north of Bering Strait goes only to Point Beechey (ca. 150° W. long.) on the north coast of Alaska. In the Archipelago it is not known to have been observed to the west of a line from south to north through Boothia and North Somerset. As will be mentioned later it is only in certain places that it plays a principal rôle in the life of the inhabitants. Among the numerous kinds of whales which live and have lived in the Arctic Sea regions there are only 3 which have been of great importance for the Eskimo, and they are the Greenland whale (*Balaena mysticetus*), the White Whale (*Delphinopterus leucas*), and the Narwhal (*Monodon monoceros*). Their occurrence is common in the northern parts of both oceans, as is their regular migration from North to South according to the season of the year and the extension of the ice. In the summer they go along the north coast of Alaska to the open waters off the mouth of the Mackenzie River; but in Coronation Gulf and the waters round King William Land no whales are found. In Bellot Strait White Whales were, however, observed by the Mc. CLINTOCK Expedition, so it is not unreasonable to assume that the indicated packing of the ice through Banks Strait and Mc. Clintock Channel sets a boundary to the migrations of the whales towards the west.

After this short geographical description the distribution of the Eskimo can briefly be expressed by stating that they inhabit the coasts of Davis Strait and Baffin Bay, the coasts of the southern North-west Passage and those of the Alaska Peninsula, or, in other words, all the places where seals occur in abundant quantity; and, as the occurrence of these in the Archipelago and in all the pronouncedly Arctic regions is contingent upon the winter ice, it may be added that, as regards these districts, the condition is that the sea regions shall be protected against the intrusion of the pack-ice.

FRANZ BOAS was the first to make clear the significance of the winter ice for the Eskimo settlement. Former investigators had regarded the sea ice in all its forms almost as an unavoidable obstruction and enemy rather than as a necessary basis and condition for existence. BOAS pointed out that, as regards the settlement, the pack-ice and the smooth winter ice were in their effect two opposing elements, in that the first is an impediment to hunting and intercourse while the second forms the exact condition for these. His conclusions regarding the winter ice, and the significance of the coast contours for the formation of this, BOAS<sup>3</sup> set forth in the following lines:

“Besides the configuration of the land, the extent of the land ice

<sup>1</sup> NORDQUIST, II, p. 94.

<sup>2</sup> ELLIOT, II.

<sup>3</sup> BOAS, II, p. 417.

formed during the winter is of vital importance to the inhabitants of the Arctic region, because during the greater part of the year it affords the only means of communication between the tribes, and because in winter the seal, which constitutes the principal food of the Eskimo, takes to those parts of the coast where extensive floes are formed. Therefore the state of the ice regulates the distribution of the natives during the greater part of the year and must be considered in studying the habits of the Eskimo. The extent of the land ice principally depends on the configuration of the land and the strength of the currents. On a shore exposed to a strong current an extensive floe can only be formed where projecting points of land form deep bays. We find the distribution of ice regulated in accordance with this fact all around the shores of the Arctic Ocean."

It is then not everywhere along the mentioned coasts that Eskimo can live. The region is broken up into a series of separate territories or centres for population, consisting of protected fjords, sounds and inner waters. This holds good of all the Arctic coasts, whereas along the Subarctic coasts where hunting on the ice is dropped the settlements generally are more continuously distributed along the coast.

In the following, the economic culture of each of these natural groups will be investigated with a special view to its adaptation to the local conditions of nature. When the whole series is described, which here is only to be done briefly and with emphasis upon the type, it will be decided which of these nuances of adaptation is the original one, and in which district it has its home.

The first group to be mentioned consists of the Baffinlanders, especially studied by Boas, after which come the Labrador Eskimo, and then comes the Polar Eskimo group, the most northern but not the most pronouncedly Arctic people amongst the Eskimo, and then follows the group of West Greenland, from Melville Bay to Cape Farewell, with which there will be some mention of that most interesting tribe at Angmagsalik on the east coast of Greenland. The following groups will be the Eskimo of the Melville Peninsula, the Kinipetu tribe which inhabits the southern part of the Barren Grounds west of Chesterfield Inlet, the Netchillik Eskimo or the tribes at the waters between King William Land and the mainland, the tribes around Coronation Gulf, the Mackenzie Eskimo, the inhabitants of the coasts of the Arctic Ocean west of Point Barrow, the Eskimo tribe on the west side of Bering Strait, the inhabitants of Norton Sound with the Yukon Delta, of Kadjak with neighbouring isles and coasts as also the Aleutian Islands.

With the description of these sections essential regard is paid to geographical conditions and none at all to the immediate numeric distribution. A consideration of this may, however, also be of interest. When one reckons that there are 40,000 Eskimo altogether, about

12,500 belonging to Danish Greenland and Labrador and 14,500 to South of Bering Strait. In other words the central Arctic regions which are several times greater in extent and coast lengths than the Subarctic regions have only  $\frac{1}{3}$  of the total number of Eskimo, here grouped in a few districts, while on the Subarctic coasts the form of settlement is more regular.

For the rest it must be remembered that the Eskimo are not essentially resident, but that they change their residence in accordance with the change of the seasons and the altered conditions of hunting. It would therefore be more correct to talk about constantly and regularly visited regions than about fixed inhabited ones. The deserted settlements which are found on numerous coasts, and may sometimes be judged to be of considerable age, are evidently also connected with this roaming. BOAS, who has subjected this question to investigation, rejects the conclusion which has at times been drawn that the Eskimo in past days inhabited several Arctic coasts which they left later in consequence of deterioration in the climate and the freezing of the sea. He finds sufficient explanation in the periodical shiftings which take place even today on the boundaries of the areas which are inhabited permanently. He even draws a parallel between the boundary line for the distribution of the Eskimo and the northern limit of woodland, which latter is not, however, a definite line, either, but a belt within which the woodland region advances towards the north in favourable periods only to recede during subsequent and unfavourable ones, leaving dead and dried up stumps. As reasons why the Eskimo feel inclined to look for new hunting grounds BOAS mentions the periodical changes in the conditions of the ice, the evacuation of old hunting grounds by animals worth hunting, and the pressure from neighbouring tribes, and he thinks that the question of the periodical migrations and the origin of the deserted settlements may be solved by a study of the wanderings which the Eskimo undertake at the present time. That BOAS is right in his view that the deserted dwellings are not due to an earlier fixed settlement is indubitable. In my paper on the Polar Eskimo<sup>1</sup> I have tried to give a more precise explanation for the occurrence of the deserted abodes in the northern and western parts of the Archipelago, in that I have associated the migrations with the occurrence of the musk ox and the comparatively rapid decimation of this animal by reckless hunting, and also with the poorness of these somewhat northern regions in seals and fish, which might serve as a support in times of stress. The views then expressed by me have later been confirmed by the observations of V. STEFANSSON, published in 1913. This author, who speaks Eskimo, and has lived in near contact with the Eskimo from Point Barrow to Coronation

<sup>1</sup> M. o. G., Vol. 34, pp. 395 sqq.

Gulf, has specially added to our knowledge about the Eskimo tribes which group themselves around Coronation Gulf. His observations and experiences as regards the occurrence of the musk ox he comprises in these indubitably correct words: "It is the nature of the musk ox that it cannot long survive in any country inhabited by a hunting people. We find nowadays that the range of the musk ox and the range of the Eskimo are mutually exclusive, for the Eskimo always exterminate those within their range. Their hunting method allows of nothing else, for when a dog or two have been set on a band of musk oxen they will hold the animals in one place indefinitely and give the Eskimo time to kill them at leisure."

By examining the kitchen-middens in North Alaska, STEFANSSON<sup>1</sup> found evidence that the Eskimo had there hunted the musk ox, and from the traditions of the Eskimo he thought that he was able to calculate that the last musk oxen must have been killed about 1860. Immediately east of Mackenzie Delta, musk oxen have been slain within the memory of man. Around Coronation Gulf the animal has now disappeared within the region which the Eskimo can easily reach when on their hunting expeditions; on Victoria Island it is only found on the rarely visited north coast; on Banks Island musk oxen are numerous, and something similar holds good of the other side, the interior region of the Barren Grounds. Probably it is also the Eskimo who have exterminated the musk ox in the Melville Peninsula and in Baffin Land, inasmuch as these lands are not so large that the relatively numerous groups of Eskimo living at the coasts cannot chase the much sought after game. Only the interior and more inhospitable islands in the Archipelago to the north of Boothia and Victoria Island, which are cut off by means of pack-ice, have, like the Barren Grounds, been able to afford the musk ox hiding places and by-places where the small wandering groups of Eskimo have not been able to exterminate them entirely. These small hunting groups — as I have previously pointed out — either had to become extinct or advance further "along the musk ox track," and must then, in most cases, have landed in Greenland. On comparing a map of districts with deserted Eskimo ruins (for example, THALBITZER in *M. o. G.*, Vol. 31) with a map of the distribution of the musk oxen (*M. o. G.*, Vol. 34, p. 401) the conformity is immediately apparent; the region is essentially the same. Or, to phrase it differently, it may be said that most of the districts where the Eskimo are now extinct, or from which they have vanished, lie inside the present range of distribution of the musk ox, and there is hardly any doubt that these two points, the Eskimo becoming extinct and the self-assertion of the musk ox, are to a certain extent reciprocally and correlatively connected.

<sup>1</sup> STEFANSSON, II, p. 450 and p. 455.

It is impressed on one in several places in the border districts how colonization which is in a permanent state of progression and retrogression, together with this settlement of hunting groups consisting of a few families, plays an inferior rôle, and may even be overlooked in this extensive region with its violent nature. As an example, shall be mentioned Banks Island, on the east side of which, at Prince of Wales Strait, MC. CLURE and COLLINSON found such a quantity of ruined dwellings that they felt tempted to believe that the district was still visited, had not the ruins been covered with moss, the drift-wood been lying untouched on the beach, and MC. CLURE's cairns and depôts of provisions been found by COLLINSON to be undisturbed. The Englishmen had some reason in believing in a more permanent settlement here, as they came across a small tribe of Eskimo at Prince Albert Sound which was not far distant. The tribe, of which the most important centres of refuge are Prince Albert Sound and Minto Inlet, has again been heard of quite lately, in that it was rediscovered in the spring of 1910 by STEFANSSON, who thinks that here he has found a tribe with numerous fair individuals, the so called "blond Eskimos." The divers problems which the observation of this local phenomenon calls into existence are not to be dealt with here, as they lie outside our immediate task. Here will only be stated, however, that STEFANSSON will have it that Banks Island, at MC. CLURE's time, really was inhabited by an Eskimo tribe which had its abode at Prince of Wales Strait, and that this tribe found MC. CLURE's ship "Investigator" a couple of years after it had been deserted in Mercy Bay on the north coast of the island; thereby, together with the Eskimo at Prince Albert Sound, this tribe attained certain significance within the Coronation Gulf domain, because its members became distributors of iron, timber and other goods from the ship. Later on, or presumably towards 1890, this tribe in Banks Island is said to have become extinct on account of the occurrence of various kinds of famine.

The view, that the dying out of the Eskimo in certain districts should be connected with a deterioration in the climatic conditions or the like, has often been expressed.

There can be no doubt that this is generally wrong. The reason for Eskimo groups, which are not in contact with Europeans, becoming decimated at some periods, while at others they are perhaps increasing, must be sought for exclusively within the real setting for Eskimo life, and amongst the effects which this exercises on the surrounding conditions of nature. Among these effects must be emphasized, as mentioned, the depredatory hunting of musk ox. Within the range of the musk ox and in the course of the 19th century, Eskimo, now extinct, lived on the north east coast of Greenland, where CLAVERING and SABINE in August 1823 came across

a small group of 12 Eskimo who lived in a tent on Clavering Island (74° N. lat.). It is not inconceivable, however, that changes in the animal life of the sea, for instance of the Great Whales from the north east coast of Greenland in the first half of the 19th century, may also have been concurrent causes for the extinction of the Eskimo.

The conditions become quite changed in those places where the Europeans appear; there European influence may bring about great alternations in the Eskimo settlement. In Greenland one has seen how the trading and mission stations have attracted the Eskimo. The same state of affairs, only with more conscientious intention, has been caused by the Moravian Brethren in Labrador. How contact with the European culture can destroy almost entire Eskimo tribes was seen in early times in South Alaska, and in recent times in North Alaska since the American whale hunters have advanced as far as Point Barrow and the mouth of Mackenzie River. In Baffin Land, at Cumberland Sound, and on the south coast, the whaling stations have from remote districts attracted the Baffinlanders.

Finally, in this place may be intimated a solution of the problem, which to SHERARD OSBORN was so strange, viz., that in Lancaster Sound almost all the deserted Eskimo settlements lay on the north side. This is no doubt connected with the conditions of the ice. If, thus, the forming of a settlement is so dependent on the ice that the pack-ice renders it impossible while the smooth winter ice is a necessary condition, it can be understood that the prevalent north-west winds must fill up the southern coasts of the passage with pack-ice while there will be more prospect of smooth ice forming on the north side. It is this condition, probably, which has caused the Eskimo, who are accurate connoisseurs of the conditions of nature, not often to have felt tempted to try a more permanent settlement on the southern coasts of these waters.

## **The Representative Types of the Economic Culture of the Eskimo.**

In the following description of types, the object is first to show which geographical features — both physical-geographical and biogeographical — determine the Economic Culture of the Eskimo, and then to point out the methods (hunting methods, methods of conveyance, etc.) by means of which the Eskimo adapt themselves to the prevailing conditions. Next, an endeavour will be made, by a comparison of the different types of economic culture, to find out the original one, and therefore it is evident, that in all the descriptions it will be necessary, as far as possible, to go back to the original conditions before European and American influence interfered with the indigenous culture.

### **Baffin Land.**

Baffin Land has the form of a broad arch which connects the two north-eastern peninsulas of North America, Melville and Labrador. It is separated from the former by the narrow Fury and Hecla Strait, and from the latter by the broader Hudson Strait, across the western end of which a chain of islands forms a bridge. Lastly, Baffin Land, with North Devon and Ellesmere Land as a northern link, form a natural connecting link between the American continent and Greenland. While the outer or north-eastern coast-line has been explored and surveyed almost everywhere, this is not the case with the inner south-western coast-line, which is known only from a few visits, and from Eskimo records. This much, however, is known, that this inner coast-line is low and fairly unbroken in comparison with the north-western, lofty, rocky coast which has numerous deep fjords, rocky isles and ranges of skerries. By the two larger indentations, Cumberland Sound and Frobisher Bay, the south-eastern part of Baffin Land is divided into three peninsulas, the northernmost of which, Cumberland, is occupied by a lofty mountain-chain, about 600 metres in height, which, along the coast, is continued towards north-west as far as Lancaster Sound. Towards south-west, this chain passes through a hilly headland into a level stretch of land which is continued to Fox basin. The two other peninsulas, Penny Land and Meta Incognita, and also Luke Fox Land, the south-eastern corner of Baffin Land, are equally



mountainous, and the mountains fall abruptly towards the sea, forming a highly rugged coast, while inland they sink towards the large lakes Amadjuak and Nettilling. The geological material of which Baffin Land is built up consists, as regards the mountain-tracts, of granite and gneiss, which are also predominant in the hilly headland. The level country, on the other hand, consists of silurian limestone. A continuous covering of land-ice does not occur; but ice-sheets usually cover the interior regions of the high land.

Although this great high-land is by no means difficult of access from the sea, owing to the fact that the amount of ice carried by the current which flows southwards along the coast from the southern sounds in Baffin Bay is not so considerable as that carried along the east coast of Greenland, yet it has been very little visited by scientific expeditions. The discovery of the country dates right back to MARTIN FROBISHER, 1576, and his successors, DAVIS and BAFFIN, and afterwards the Dutch and the British carried on whale hunting in the neighbourhood of its coasts, but our knowledge, as regards its nature and inhabitants, dates exclusively from the 19th century. Since 1818, when JOHN ROSS made his first voyage, Baffin Land has been visited by a series of ship-expeditions, whose object, however, was more to survey the coasts than to make geographical and ethnographical observations proper. From 1840 the whalers adopted a new mode of procedure; they established winter stations on land in Cumberland Sound, whence they could begin whaling immediately the ice broke up in the summer. Simultaneously, they came into close contact with the Eskimo, whom they employed, and paid with European goods. An attempt made by the Moravian Brethren in 1857 to carry on missionary work in Baffin Land was abandoned, on the grounds, that it was impossible to get hold of the population so long as they were dependent on the whaling stations, which exercised a highly demoralising influence upon them. Of recent years a missionary station has, however, been maintained on Blacklead Island in Cumberland Gulf, where, more particularly, the well-known missionary and Eskimo-friend, E. Y. PECK, who is also known in Hudson Bay, has been working. As regards science, we owe almost nothing to the whalers, for the latter, as a rule, had no interests of this nature. But in this respect, also, some change has taken place recently. Both FRANZ BOAS and A. P. LOW have made much use of the information they obtained from American and Scottish whaling captains, and among these, Captain GEORGE COMER from East Haddon in Connecticut should especially be mentioned; his area of observation was, however, more particularly Hudson Strait and the western side of Hudson Bay.

A better knowledge of Baffin Land and the Baffinlanders dates from C. F. HALL's stay near Frobisher Bay during 1860—62, and from the Howgate Expedition to Cumberland Sound in 1877—78. But none of these expeditions — the latter of which has been described by L. KUMLIEN — has yielded results which can be compared with those derived from the studies made by F. BOAS at Cumberland Sound from August 1883 to August 1884. BOAS, in a series of papers, has given a full account of his important voyage.

Along the shores of Baffin Land the Arctic Current prevents the formation of smooth winter-ice off the precipitous, projecting cliffs, and permits of it only in the bays. Far to the north, where the shore is protected by the Bylot Island cutting off a large part of the sea, a small Eskimo tribe resides. Between Bylot Island and the narrowest part of Davis Strait an almost continuous fringe of rather smooth ice is formed, the formation of which is rendered possible by the presence of the many smaller peninsulas which are usually continued as shoals, and upon which the larger masses of ice run aground and collect as a bulwark against the destructive pack-ice. South of Cape Dyer the current is so strong that winter-ice can be formed in the bays only. On the evidence, partly of journals kept by whalers through a long series of years, and partly of his own and HALL's observations, BOAS<sup>1</sup> has made a close study of the ice conditions in Cumberland Sound. By a constriction, the centre of which is situated 65° N. lat. and 65° W. long., Cumberland Sound is divided into an outer and an inner part, of which the outer, owing to the strong tidal currents, never freezes. In the inner, an ice-covering is formed every autumn, the concave edge of which usually rests on two projections situated opposite to each other, and does not increase further in extent during winter. When the ice, during autumn, has attained considerable thickness, and has been strengthened by the freezing-in of icebergs and floes, it enlarges no further, as the pack-ice set in motion by violent currents is able to prevent an enlargement of the sheet from the addition of fresh masses of ice. Consequently, the extent of the ice is wholly dependent on weather conditions during autumn. The smaller fjord-branches freeze even in October, and the open parts of Cumberland Sound in November; but in the case of storms the ice may break up once or several times before it ultimately becomes permanent. And in the narrow entrances to the interior fjords there is open water throughout the whole winter, owing to the violent currents. Throughout June the ice may still be traversed by means of sledges, and not until in July or even in August does the ice break up. The fact should be noted that the ice does not disappear by thawing, but as the result of the destructive power of the waves. Therefore, so long as the winter-ice has a broad edging of pack-ice, it remains.

In Baffin Land reindeer are found, and here as elsewhere they migrate to and fro between the coast and the interior, but they hardly occur in such great numbers as on the northern peninsulas of the continent<sup>2</sup>. Of aquatic mammals the Ringed Seal is the most important, both on account of its abundance and because it is constantly present, whether the sea is open or is ice-bound<sup>3</sup>. On the other hand, the larger species of seal leave the coast when the sea freezes over, and the same applies to the walrus,

<sup>1</sup> BOAS, VI.

<sup>2</sup> BOAS, II, p. 438.

<sup>3</sup> BOAS, II, p. 471.

which also betakes itself outside the ice-edge. The Arctic Right Whale (*Balaena mysticetus*) which was hunted formerly by the Eskimo has long been of no importance along these coasts.

As regards the economic life of the Baffinlanders the year is divided into two principal parts, a short period with open salt and fresh waters, which is spent in the interior for the purpose of hunting reindeer and catching salmon, and a long period which embraces about three quarters of the year, during which the sea is covered with ice. In the latter period hunting the Ringed Seal (*Phoca foetida*) is the chief means of subsistence, and the movements of the settlement depend on the movements of the game. With the exception of a few places where they travel to the ice-edge to carry on walrus hunting, the Baffinlanders live throughout the winter on the ice and are not dependent on the open sea for their livelihood<sup>1</sup>.

It should be remembered that the inhabitants of Fury and Hecla Strait are most closely connected with the Melville Peninsula, and that the west coast of Baffin Land towards Boothia Gulf and Prince Regent Strait and also towards Fox Basin is uninhabited or rarely visited, while the eastern coasts have a more constant Eskimo-population. BOAS has established a long series of groups or tribes, each of which has its principal residence in one of the larger indentations, and among which the inhabitants of Cumberland Sound, the so-called Oqomiut, are the most characteristic. According to his statements there must be altogether about a thousand Baffinlanders on the north, east, and south coasts. As regards their culture he gives as a type the Oqomiut group around Cumberland Sound, or more properly that portion of them whose home is on the north side of the sound, because the western inhabitants, the Talirpingmiut, spend so great a part of the year around Nettilling Lake that they approach an inland tribe in their mode of living.

In his maps of Baffin Land BOAS gives the different settlements for four seasons of the year, which he calls spring, summer, autumn and winter. On comparing, on BOAS's map of Cumberland Sound, the position of the autumn and winter settlements it is seen that there is hardly any difference beyond the fact that the latter have been moved further out on the ice or skerries. As the result of the summer reindeer-hunting is not so considerable that a large supply can be stored for winter use, it is necessary for the Eskimo to begin seal hunting as soon as the sea is ice-covered. The first weeks are spent near the coast, because it is dangerous to venture too far at this time of year, when the ice easily breaks up; at this period the Ringed Seal is caught in openings in the ice caused by currents, and at holes kept open by the movements of an enclosed iceberg; later on, when the iceberg freezes fast, the Ringed Seal must be sought further out, where it is taken especially by the Maupok method. In the month of March the snow burrows in which the seals have brought forth their young are sought;

<sup>1</sup> BOAS, II, p. 461.

and ultimately, during spring, the seals which sun themselves on the ice are hunted (Utok hunting). Throughout the period spent on the ice snow houses are used as dwellings, and the people live more or less scattered, in accordance with the necessities of the chase.

During summer a further scattering takes place. The main part of the Baffinlanders go inland for the purpose of fishing and hunting reindeer; but in certain localities small groups of them remain on the coast to hunt the larger species of seal and the walrus, and, formerly, the whale. In the interior of the country the tents are pitched in those valleys which lead from the interior to the coast, and along which the reindeer herds must pass on their wanderings. The method of reindeer hunting mostly followed is to kill them from the kayak while they are swimming across a river or lake. The hunters either lie in wait at a river where reindeer herds are accustomed to arrive, or the herds are driven into the water from narrow peninsulas or by means of two converging rows of stones. Such rows of stones, usually leading into a lake or into the sea, occur everywhere in Baffin Land, and some of them appear to be very old<sup>1</sup>. Salmon are caught with the three-pronged spear. To lure fish, an artificial bait is used; artificial dams are also thrown up to shut out the fish from the sea. Fishing hooks are used, and very old forms have been found.

During summer the larger seals and the White Whale are captured from kayaks, and in former times the large White Whales were pursued in the umiak. The umiaks play the most important rôle along the outer coasts of Davis Strait itself, where the sea is open for a longer time than within Cumberland Sound. According to Boas's<sup>2</sup> observations just the reverse is the case as regards the kayak. Even in 1884 many years had passed since any kayak had been built at the fjords of the east side of the Cumberland peninsula.

The dog sledge is, however, the Baffinlanders' chief means of conveyance; it is nowhere wanting, and it is of especial importance as regards seal hunting on ice during winter. Frequently, only two forms of dwellings are used, the tent during the summer and the snow house during the winter; but occasionally more solidly built houses of stone and earth are also built. From the numerous ruins Boas concludes that in former times such houses were more frequently used than at the present day. The houses are rounded and are frequently dug in the slope of a hill-side. The roof has usually been supported by whale-ribs and was of seal skins stretched over the whale-ribs and covered with a thick layer of *Andróméda* and over that a layer of earth. Each house has as a rule been occupied by two families. In kind, and partly in form, the implements of the Baffinlanders resemble in most points those of the Greenlanders. Intercourse with Europeans has now produced changes in the material, but not to any great degree in the forms.

<sup>1</sup> Boas, II, p. 501.

<sup>2</sup> II, p. 486.

According to BOAS's investigations there can hardly be any doubt as regards the route by which the Baffinlanders have migrated into their present coastal districts. From the Melville peninsula they have followed the transverse hollows of the country, which as a rule are continued as deeper indentations to the east coast. From here one stream has gone northwards across North Devon to Smith Sound, while another has gone from the south coast of Baffin Land across the bridge formed by the islands in the west end of Hudson Strait to Labrador. The features given by BOAS of the economic culture of the Baffinlanders, and especially of their annual economic cycle, show distinctly that their original economic culture has been of an Arctic character<sup>1</sup>.

### Labrador.

The peninsula of Labrador is a mountainous country which consists of old eruptive rocks, and towards its north-eastern coast rises to considerable heights. From an anthropogeographical point of view it is divided into two different parts, (1) the interior occupied by numerous lakes, bare rocks, and woods, and (2) the lofty, indented, rocky coasts of the north-east and north-west sides, which, like the east coast of Baffin Land have a fringe of skerries.

Corresponding to this separation is the division of the population into Indians and Eskimo, the former inhabiting the whole of the interior of the peninsula, and the latter the coasts inclosed by the skerries. What is especially peculiar to the sea here is the enormous tidal movement; the difference between low-tide and high-tide having been registered to be on an average 12 metres, capable at times of rising to 20 metres. In consequence the current through Hudson Strait is very strong and only the skerry-protected inclosure is covered with a level layer of ice during winter, while the unconfined sea is open and filled with drifting floes. TURNER<sup>2</sup>, who mentions the dangerous navigation along the north coast of Labrador says: "In August and September the strait is comparatively free from large floes, but after this period the seas, fjords and other protected waters may freeze over in a single night." But, as a rule, the protected waters, to which not even the floes have direct admittance, are free from ice from May till sometime before December. In spite of the comparatively low latitude, the flora of the cliffs and the marine fauna very nearly approximate purely Arctic forms. The seals, which were formerly extremely abundant, have now diminished greatly in numbers, in consequence of the persecution inflicted on them by the seal-clubbers; but the Ringed Seal and the Greenland Seal still occur in great numbers. The walrus is said previously to have lived far within the Gulf of St. Lawrence, where the last of them is said to have been exterminated on Magdalene Island by English fishermen<sup>3</sup>.

<sup>1</sup> BOAS, I and II.

<sup>2</sup> TURNER, I, p. 172.

<sup>3</sup> A. S. PACKARD, I, p. 70.

As regards the supply of wood for boats and implements, the Labrador Eskimo procure this not only from drift-wood, and from the willows and alders of the coast, but also by travelling 40—100 kilometres up the course of the rivers, which brings them within the forest-limit. Such sledge journeys are made during winter by the inhabitants of the north-eastern coasts<sup>1</sup>.

In contradistinction to the inhabitants of Baffin Land and Greenland, whose distribution is limited only by natural conditions, the Labrador Eskimo are excluded from the interior of the country by the presence of the Indians.

As might be expected, the relations between the two people are of a hostile character because both aspire to the lordship of the reindeer hunting in the coastal districts. Since the Eskimo must be regarded as having immigrated from the north across Hudson Strait, we may be justified in concluding that they were the last to arrive. This, however, does not appear to be the case. According to LUCIEN M. TURNER, who has made Labrador the object of a thorough ethnographical investigation, the Indians were the last to immigrate. On the basis of the folklore of the two people and on their own traditional ideas, the author in question thinks that he can prove that the Indian population of the interior and northern districts of Labrador have immigrated at a comparatively late period; perhaps they have been expelled from the south. The fact of their being Algonkin Indians favours the belief that they have come from the regions between the St. Lawrence and the Hudson, but the question whether they found the Eskimo on the coasts and whether these were at that time the only inhabitants of Labrador does not require any answer in this connection. The same is applicable to the other interesting question regarding the previous distribution of the Eskimo along the coasts of the Atlantic, which is connected with the problem of the Scandinavian Greenlander's collision with the Eskimo or the Indians. As the example from the west coast of Greenland shows, the Eskimo Arctic culture may very well be changed into a more Subarctic form if only a sufficient abundance of marine mammals is present, but it must be maintained that on a coast in the temperate zone the Eskimo culture must lose all its peculiar character, or it would, in other words, meet an anthropogeographical limit. It is probable that the Gulf of St. Lawrence has formerly been inhabited by an Eskimo population, which, however, even in the days of "discovery" were greatly hustled by the Algonkin Abenakies; till somewhat within the 17th century the eastern part of the north coast of the Gulf of St. Lawrence is said to have been inhabited by the Eskimo. At the present day Hamilton Fjord, at 54° N. lat., is the southern limit of the Eskimo; but they formerly lived at the Strait of Belle Isle, and even in historic times occasionally visited Newfoundland, whence they fetched wood<sup>2</sup>. But their standing in these southern regions was probably one of contest. So long as the region in question has been visited by Europeans the Abenakies have made war on the Eskimo; but even if the former have been the last to

<sup>1</sup> A. S. PACKARD, II, p. 69.

<sup>2</sup> A. S. PACKARD, I, pp. 245, 252, 257, etc.

immigrate, the Eskimo have probably met other inhabitants about the Gulf of St. Lawrence. Thus, there are several indications of the Beothuk tribe being the residue of a people which has been supplanted by the Eskimo and the Abenakies and has possibly had a wider distribution.

Although the southern part of Labrador had already been visited by CARTIER, and although CABOT in 1498 had seen the northern part from Hudson Strait, DAVIS, as a result of his voyage in 1586, was the first to give a detailed account of the country. In the 17th and 18th centuries there had been a kind of commercial intercourse between the Eskimo and the European fishermen and seal hunters, but it often led to hostility and reciprocal deeds of violence. CARTWRIGHT<sup>1</sup>, who himself traded with the Eskimo, says that the Eskimo Indians have always been regarded as the most savage tribe in the whole of the American continent, and he gives instances of their murders and robberies. Not until the Moravian Brethren had begun their missionary work did more peaceful and honest trading relations gradually develop. It was in 1752 that the Moravian Brethren first visited Labrador, but not until 1771 was the first missionary station established, which did not come off without blood-shed as the Eskimo regarded it as an attempt of the dreaded fishermen to gain a footing in their country. At the present day the mission has six stations, which all lie on the north-east coast between 55° and 59° N. lat.<sup>2</sup>

Besides the Eskimo on the north coast there are, according to L. M. TURNER, two other groups in Labrador which are less known, of which the one lives along the south side of Hudson Strait, west of Ungava Bay, or mainly on that coast of Labrador which is situated north of 60° N. lat., while the other lives on the east side of Hudson Bay between 53° and 58° N. lat.

The Labradors possess the usual implements. The kayak is more commonly used on the sea than was the case in Cumberland Sound. During the summer, seals and White Whales are pursued from kayaks, and on these are found the usual appurtenances known from Greenland, viz., harpoon and floats, lances and bird darts<sup>3</sup>. On journeys the umiak is used; it has not become a woman's boat to so great an extent as it has in Greenland. During winter, travelling is facilitated by the use of snow shoes and dog sledges, and, judging from TURNER's and PACKARD's descriptions, the dog sledges are more especially used for travelling on the frozen waters of the interior than on the sea ice. As regards dwellings, according to TURNER, the heathen Eskimo who live at Ungava Bay use only tents and snow houses. Winter houses with stone walls and roofs of timber, the ruins of which are found in several places, are no longer used. In 1777, at the Nain of today, CRANZ<sup>4</sup> is said to have seen a meeting house, a large snow house, which had a

<sup>1</sup> CARTWRIGHT, p. 1 sqq.

<sup>2</sup> A. S. PACKARD, I, p. 275.

<sup>3</sup> L. M. TURNER, I, pp. 235 sqq.

<sup>4</sup> According to A. S. PACKARD, I, p. 254.

height of above 4 metres and an under surface of 6·5 metres square. The real time for hunting is the summer half of the year, or, to put it more exactly, the period from May to December<sup>1</sup>. During these months the Eskimo families live scattered on different hunting grounds. When, in the spring, the time for the breaking up of the ice approaches, the tent, umiak and kayak are packed on the dog sledge, and brought to the outermost skerries. If the ice outside these is not broken up, the men hunt reindeer, hares and other game on land, and afterwards carry on seal hunting from the kayak; while the women and children collect eggs. Towards the end of June, according to KOCH, and after June 25th, according to TURNER, the seals, which have been wandering northwards, are less numerous. Now the whole family sails again to the mainland and settles down at the various rivers to carry on salmon fishing during July and August. Then comes the time for going inland to hunt from the kayak the reindeer swimming in herds across the rivers. This hunting is continued until the rutting season has begun and the males have become lean. The season is now so far advanced that ice has already begun to form along the sea coast, and it is necessary to resort to the coast before the running water freezes. At the sea coast, where they settle down for the winter, they live for a time on the deposited meat of the reindeer, and of the small game which is caught in traps, until the ice-covering on the fresh waters is strong enough to enable them to fetch on dog-sledges all the spoil of the reindeer hunt. Consequently, from November to May, they live at the winter settlements, as regards the Moravian-Brethren-Eskimo this means the missionary station. At this period, while the sea is still open, seal hunting is first carried on from a kayak, while afterwards, when the ice begins to form, the seals and White Whales enclosed in openings in the ice are hunted, or nets are set, and still later, net-hunting ceases and hunting on ice is carried on. But ice-hunting is evidently of comparatively slight importance in Labrador. Here the most profitable methods of hunting are seal and White-Whale hunting from a kayak, and the autumn-hunting of reindeer.

### The Polar Eskimo.

We are here using the name Polar Eskimo, a name prevalent in Danish literature, to indicate a small group of Eskimo, numbering about 200 souls, who live on the north-west coast of Greenland between 76° and 79° N. lat. This the northernmost group of all the inhabitants of the earth, was discovered by JOHN ROSS in 1818, and in the following century they had for a long time only very irregular intercourse with the white race. But from 1891 to 1909 during which time PEARY undertook his famous expeditions

<sup>1</sup> H. R. KOCH, pp. 160 sqq.; TURNER, I, pp. 202 sqq.



and made lengthy sojourns among the Polar Eskimo, they came into more regular connection with civilization and its products, of which they had special use for wood, and, besides, quickly learned to appreciate firearms. It was just in the latter year — 1909 — that the Danish Eskimo-explorer, KNUD RASMUSSEN, who, even during the years 1903—1904, had together with L. MYLIUS-ERICHSEN lived among the Polar Eskimo, began a series of new expeditions to these regions, and along with this some undertakings for the benefit of this small tribe. Thus, in 1909 KNUD RASMUSSEN conducted the establishment of a missionary station near North Star Bay, and later on a trading station was founded, likewise under his auspices, at Umanark near Wolstenholm Sound. These events and undertakings have been instrumental in greatly improving the conditions pertaining to the means of subsistence of the Polar Eskimo, as in their Polar Bear and fox skins they have products which insure them no small purchasing power.

Notwithstanding this, the economic culture of the Eskimo has altered but slightly, and at any rate it is yet easy to form an opinion of the tribe's original conditions of life and economic culture in the course of the year. I have lately treated this question in *M. o. G.*, Vol. 34, (Contributions to the Ethnology and Anthropogeography of the Polar Eskimo, pp. 268 sqq.), to which the reader is referred for fuller notes on the subject; here it will suffice to give a brief survey.

What strikes us as most peculiar as regards the geography of these northern regions is their long summer-day and their unbroken winter-night, each of about equal duration. In the regions near Cape York the winter-night lasts about 102 days; or to the 11th of February. This circumstance does not, however, play such a direct rôle in the Eskimo culture as might be expected. In these high latitudes it is the smooth ice-sheet of winter which is also one of the most important and stipulating factors. Therefore it is, also, that an Arctic Eskimo tribe has been able to settle on the east side of the Smith-Sound passage, and not on the west side, filled with masses of Arctic ice coming from the north. On the east side there are the two large indentations, Inglefield Gulf and Wolstenholm Sound, and it is inside the groups of islands situated at their mouths that the smooth winter-ice has free opportunity to form. The summer, or the season of the year when there is open water, lasts only 3 months, while the winter with its ice-sheet on the fjords, and especially on the stretches of sea situated inside the islands at the mouths of Inglefield Gulf and Wolstenholm Sound, lasts 9 months of the year. There is an immense difference between the economic life of the Eskimo in the summer and in the winter; but the locating of their settlements is somewhat similar. The Polar Eskimo pitches his summer tent more or less in the same favourable locality where he or his kinsmen have their winter-houses.

Nowadays their chief summer occupations are whale hunting and the hunting of seals from a kayak. But previous to about 1862—63 when they

did not use the kayak, they were obliged to spend the summer near the sea-fowl cliffs, where food was easily obtainable in the form of the birds and eggs. Before the period mentioned the Polar Eskimo did not even go reindeer hunting towards autumn as part of the tribe, at any rate, does now. Even salmon-catching in rivers appear to have been forgotten. That is to say, the summer economic-culture had been reduced to the tribe's last and easiest obtainable reserve means of subsistence, viz., bird-catching along the Auk cliffs of the coast. All the other sides of the Eskimo summer-culture had gone out of use. In addition, the scarcity of wood for boats and implements has undoubtedly also played a determining rôle here.

When the sea becomes ice-covered, the walrus, white whale, and narwhal go out to the ice-free waters. Within the fjord the Ringed Seal is hunted at the breathing holes. As long as the ice is smooth and without a snow-covering, the smooth-ice method is used, the hunter being then able to run up noiselessly and harpoon the animal through the breathing hole. Afterwards the Maupok method is used throughout the winter, in the event of their not having sufficient supplies from the autumn. When the Arctic night has ended in February, and the period of light returns, the Polar Eskimo leave their winter houses and set out on their dog sledges to the best walrus-hunting grounds at the edge of the firm ice. From this time onwards they live in snow houses. The methods used for walrus hunting correspond with those used for seal hunting, only they have been adapted to suit the pursuit of the larger animal. Here attention will be drawn only to the peculiar tackle which is used to haul the animal up onto the firm ice — a surprising feature in the technical winter-culture of a tribe of which the summer-culture was so impoverished.

In addition to walrus hunting, seal hunting is also carried on during the spring months. At first spring hunting, which has also often been described from the Central Eskimo, is pursued, the object being to find the snow-burrows in which the female seals have brought forth their young. Another and more profitable method of hunting is the Utok hunting, which is now carried out with firearms. During May the ice becomes cracked, and hunting at the cracks begin. The sun is now above the horizon all day; the snow houses are no longer fit to be dwelt in and the Eskimo move into tents. The cliffs have again been taken possession of by the sea-fowl, and now, late in May and during June, bird-hunting is largely carried on; the point, especially in olden days, being to reach on dog sledges the good sea-fowl cliffs before the sea-ice breaks up.

A brief, but typical account of the annual economic cycle of the Polar Eskimo has now been given. No mention has been made of the hunting of Polar bear, fox, and hare, or of the rare excursions made for hunting musk-ox in Ellesmereland; all these things being more occasional undertakings; though the hunting of Polar bears and foxes in particular, on account of their skin, is absolutely necessary in order to provide the tribe with an adequate supply of warm clothes.

### Greenland South of Melville Bay.

The Polar Eskimo represent the most Arctic grade of Eskimo culture, in so far as they live farthest towards the north, and have been in the highest degree dependent on hunting on ice. In former days there lived here a "coastal tribe" which was dependent on aquatic mammals for its means of subsistence, but nevertheless used no kinds of water-craft, which should not, however, be understood to mean that it had never known water-craft, but that it had been possible for them to forget the use of them.

When passing along the west coast of Greenland southwards, from the long and uninhabited Melville Bay, filled with glaciers, one comes to a stretch of coast about 2,800 kilometres in length, fairly evenly populated, which proceeds in a direction approximately from north to south, from the northernmost settlement situated about 73° N. lat. to Cape Farewell situated about 60° N. lat. Along this stretch of coast the transition from the Arctic to the Subarctic climate is accomplished by degrees, and in the economic culture, likewise, a gradual change takes place from the Arctic to the Subarctic — from the predominating hunting on sea-ice to the predominating hunting from boats. In the district of Upernivik, that is in the northernmost regions, the conditions are yet more distinctly Arctic in character, while they are far from being so farthest towards the south. Even RINK, in his description of Greenland, pointed out and explained that it was possible to distinguish between a northern and a southern form of Eskimo culture in Danish West Greenland. Just as there, a boundary line must be drawn between the northern and southern form, or between the Arctic and the Subarctic economic culture, near Holsteinsborg, immediately north of the Arctic Circle, or at the southern limit for the use of the dog sledge.

In geological and geographical respects West Greenland reminds us by its predominant gneiss and granite formations, its deep branching fjords and its numerous rocky isles and ranges of skerries, of the west coast of Norway. Peculiar to Greenland, however, is the land-ice of immense dimensions which only leaves a narrow line of coast, the so called "Yderland" (maritime country), free from ice, and the great glaciers which descend from the land-ice and empty themselves into the ice-fjords, encumbering the sea with floating icebergs. On the southern part of the coast the glaciers are generally small and few in comparison with the great glaciers which descend to Disco and Umanak Bays, and to the coast near Upernivik. As a set-off, the south coast, and especially the stretch of coast along the district of Julianehaab, has the peculiarity that every spring it is blocked by "Storis", that is, by Polar sea-ice which the East-Greenland current carries south of Cape Farewell. Thus this "Storis", of which a crowd of floes remain, as a rule, until August, when it disperses and gives place to open water, is, during a great part of the summer, a decided hindrance to navigation along the southernmost part of Greenland's west coast.

As regards climate the western side of Greenland differs considerably from those regions in Baffin Land and North America which lie on the same parallel of latitude. While the east coast of Baffin Land still has a severe Arctic and somewhat continental climate, that of West Greenland must more properly be described as a raw and inclement coast climate, which, towards the south becomes rather unsettled. A glance at the isothermal chart shows that the isotherm curves northwards along the west coast of Greenland, and that especially the January isothermal line forms a very sharp curve at the meridian of the west coast. Thus, the January isotherm of  $-20^{\circ}$  runs in North America across Lake Winnipeg and the coast of Labrador at about  $50^{\circ}$  N. lat., while in Greenland it goes over Disco.

As regards the life of the Eskimo, the important result of these climatic conditions is that the winter ice in the West Greenland fjords and bays does not remain so long as in the corresponding regions of Baffin Land. Only the three northern coast areas near Disco, Umanak, and Upernivik, are as a rule ice-bound the greater part of the year, for which reason the dog sledge is here the chief means of conveyance. In the course of October an ice-covering forms itself over the whole of Umanak Bay, which in November can be traversed by means of dog sledges; this ice-covering usually remains until June in the following year. Along the southern stretch of coast it is only in the interior, remote, parts of the fjords that one can hope for a somewhat reliable ice-covering during some months of the year, while the layer of ice out between the islands is so variable, and has so many spaces of open water, that no use can be made of it. Holsteinsborg, therefore, is the southernmost colony where the dog sledge is used, and it plays a very inferior rôle also at the south-western outlying stations of the district of Egedesminde, at Godhavn on Disco, and near the settlements in the extreme part of the Vaigat<sup>1</sup>.

Even the consideration of the conditions pertaining to climate and of the ice-formation gives ground for the occurrence of the two nuances in the Eskimo culture at the west coast of Greenland: (1) The Arctic form, where the dog sledge is used, and where hunting on ice is one of the most essential and necessary means of subsistence, and, (2) the Subarctic form where the hunters are exclusively dependent on the open sea for their livelihood. In the southern districts, therefore, the use of the small hunting-kayak has reached its highest degree of perfection — but for travelling the large skin-boat (umiak) is always used, — and the settlements are connected with the belt of rocky isles and skerries which are to be found along the outer coast, while the Arctic West Greenlanders live by preference at the head of the indentations, and chiefly use the sledge, both for travelling and as a means of shifting their habitation.

The conditions of communication are, however, only a single factor as regards the settlement. What is of main importance is the occurrence, and

<sup>1</sup> RINK I, Vol. 2, p. 146.

mode of living, of the aquatic mammals, so necessary for the Eskimo. Of the five essential seals, the Bearded seal, the Harbour seal, the Crested seal, the Greenland seal, and the Ringed seal, there are only two which form the Eskimo's real means of support. The Harbour seal occur scattered, and a few only are killed<sup>1</sup>. The Bearded seal also occur in small numbers, and appear to be hunted chiefly at the south-west coast; it is of some importance, however, as its skin is in great demand on account of its durability<sup>2</sup>. The Crested seal is connected with the "Storis" and arrives only at certain seasons of the year. The hunting of the Crested seal is of importance in the district of Julianehaab, where, according to RINK, it constitutes about one-third of the profits of the year<sup>3</sup>. Then there are the Ringed seal and the Greenland seal, which form the basis of the Eskimo existence: the Ringed seal in the north, and the Greenland seal in the south. Even FABRICIUS<sup>4</sup> reports that the Ringed seal is most numerous in Disco Bay, Umanak Bay and in those northern fjords which are frozen over during the greater part of the year. RYBERG<sup>5</sup> writes, respecting the Ringed seal, that it is the one which is chiefly hunted in North Greenland. It is present in great numbers during the winter-time proper, and may be caught anywhere along the coast, and in the fjords. In South Greenland, also, it is present practically all the year round, but here it is not of the same importance to the community.

As regards the hunting of seals the difference between north and south Greenland must not be sought in the circumstance that south of the district of Holsteinsborg new methods appear, but in the fact that some of the hunting methods from North Greenland cease to be used. The common method of hunting from a kayak with harpoon and throwing board is followed everywhere on the west coast; but while in North Greenland it can be practised only during a short time of the year, it is, so to speak, the only method which in South Greenland yields a considerable return. It is probable, partly, that this method was the only one originally used by the Eskimo for hunting Greenland Seals, and, partly, that the want of winter-ice in the southern regions has resulted in it here being impossible to employ the methods of hunting on ice. Consequently, the conditions are far more difficult in southern, than in northern Greenland, the hunting from a kayak in the open, stormy sea being subject to far greater casualties than is the hunting on ice. Failure to capture is far more frequent, and as the animal chiefly hunted, the Greenland Seal, is a migratory animal which in the course of the year twice leaves the coast, the inhabitants must be more provident than their country-men in the north, in whose waters

<sup>1</sup> WINGE, pp. 427 sqq.

<sup>2</sup> WINGE, p. 423; FABRICIUS, IV, pp. 143 and 151.

<sup>3</sup> RYBERG, p. 88; RINK I, Vol. 3, p. 187; WINGE, p. 449; FABRICIUS, IV, p. 130.

<sup>4</sup> FABRICIUS, IV, p. 82.

<sup>5</sup> RYBERG, p. 88.

the Ringed Seal lives all the year round. A kind of transition from hunting from kayaks in the open sea to hunting on ice is brought about by the hunting from ice-edges in places kept open by currents, from openings in the ice caused by the movements of an enclosed iceberg, or from the cracks made in the winter-ice by the calving glaciers. The latter mode of hunting is practised especially in early winter. The hunter always takes his kayak with him in order, if need be, to fetch back the animal harpooned or shot. This method is also used in the case of enclosed shoals of White Whales which have resorted to the nearest opening in the ice. If the ice forms during autumn with a glassy surface, which, however, is not the case every year, and then as a rule only in Umanak Bay, hunting on smooth-ice can be practised. In the winter-time proper, when the sea is quite frozen over and the ice is snow-covered, Maupok hunting is carried on, and in spring the seals which come up on the ice are hunted (Utok hunting).

Yet another method of hunting was formerly followed in the northern part of West Greenland, but even in RINK's time it was of very slight importance. Since then it has not become quite extinct, but it is used only rarely. In East Greenland near Angmagsalik GUSTAV HOLM found it still in use in 1884. According to the description given by HOLM, first two holes are made through the ice, the one two feet in diameter, and the other just large enough to allow the harpoon shaft to pass through it. Two men take part in this mode of hunting; one of them lies down on the ice and peeps through the large hole, after he has so covered his head that his sight can better penetrate the water. This man guides the long harpoon shaft, which is held down in the water by the man who is standing upright with the harpoon shaft in his right hand and the hunting line in his left. "In order to entice the seals there are fixed close to the head two pieces of bone, carved in the form of seals, which vibrate on cut feather-bags. As soon as the seal comes under the harpoon, and the right moment has come, the man on the lookout shouts 'kae', and the other man makes a rapid thrust". This mode of hunting is called *ituarpok*<sup>1</sup>.

This last method is undoubtedly a very old Arctic-Eskimo method of hunting, which in practice, however, has not been able to compete with the Maupok method, because it required two men, whereas the Maupok method can be practised by a single hunter, who either operates quite alone or makes use of a dog to scent out the breathing holes. But the method is of interest on account of its original character.

How the methods of hunting seals — so few in number — have been altered in our own days, and especially after the rifle came into general use is not of much concern in this connection<sup>2</sup>. Likewise it will suffice to point

<sup>1</sup> M. o. G., Vol. 39, p. 57. Cf. PORSILD, pp. 133—134.

<sup>2</sup> As regards some new contrivances which the introduction of firearms has necessitated, for instance the kayak rudder, the rifle bag, and the shooting screen, the reader is referred to M. o. G., Vol. 50, pp. 135 sqq., where I have shown that the shooting screen for the kayak was probably first used in

out that the catching of seals in nets is now frequently preferred to the laborious old methods. It must be taken for granted that the present greater employment of nets is due to Danish influence and the use of Danish nets; but it is nevertheless probable that the Greenlanders, even before the Danish time, caught seals in nets made of whalebone.

The two smaller whales which always have been of great importance to the Greenlanders are the White Whale and the Narwhal. Both occur rarely in South Greenland, while in the northern bays they are of considerable importance<sup>1</sup>. During summer they are hunted from kayaks in the same way as the larger species of seal. The same applies to the small dolphins and porpoises, provided the hunter seizes his opportunity, because they are usually too wary. The hunting of the great *Balaenoides*, such as the Greenland whale and the Rorqual whale has now ceased, and the method has been forgotten. In former times it was carried on with great profit in the intermediate part of the coast around Holsteinborg, or in the same districts where, afterwards, the Danes carried on whale hunting<sup>2</sup>. From Angmagsalik G. HOLM, and afterwards THALBITZER, have collected many evidences of the fact that whale hunting has there been practised after the same method as on the west coast<sup>3</sup>.

H. EGEDE, O. FABRICIUS and H. C. GLAHN<sup>4</sup> have described the whale hunting of the West Greenlanders and the customs pertaining to it. Usually it was carried on jointly by 2—3 umiaks manned by 10—12 men. FABRICIUS writes that, in the first place, the bottom of the boat had a layer of inflated seal-bladders "to prevent it from sinking". The method consisted, for the rest, in the hunter creeping in upon the whale, harpooning it, and afterwards approaching the emerging animal and thrusting into it a new harpoon with line and bladder-float. If the whale is killed and floats upon the water the hunters flense it, dressed in their so called "Springpels" ("cutting out" clothing) which comprises skin jacket, trousers and boots in one, and is so constructed that it can be drawn tight under the chin and at the wrists. Through a hole in the front the hunter creeps into it and then the "Springpels" is inflated with air and all the openings are laced up<sup>5</sup>.

The customs observed with this method of hunting, and the rules according to which the spoil is divided among the hunters and the chance-partakers in the hunt, remind one strongly of the conditions among the

Disco Bay during the "seventies" of the 19th century, that the rifle bag for the kayak was undoubtedly used for the first time in 1870 in Umanak Bay, and that the kayak rudder was invented in 1868 by a seal-hunter, JENS REIMER, who lived in Jakobshavn in Disco Bay.

<sup>1</sup> RINK, I, Vol. I, pp. 85 and 100; Vol. 2, p. 210. RYBERG, p. 89.

<sup>2</sup> RINK, I, Vol. 3, p. 207.

<sup>3</sup> M. O. G., Vol. 39, pp. 56 and 403.

<sup>4</sup> GLAHN, pp. 273 sqq.

<sup>5</sup> A "Springpels" is found in the National Museum in Copenhagen.

West Greenlanders, and especially, among the Eskimo around Point Barrow. In Greenland the whale hunting was the only occasion when men would condescend to row the umiak. H. C. GLAHN writes "Even then they do not row with the umiak oars, or with their backs to the bow, but with small hand-paddles, and with their faces turned to the fore end of the boat"<sup>1</sup>. This record provides, in addition, the important ethnographical information that the umiaks, as commonly used, were not propelled with paddles, but were rowed with heavy oars, as was the case, for instance, at Point Barrow. Sails were also used on the umiaks.

The region north of Holsteinsborg, where it so happens that the west-ice, or the westerly ice-laden current of Davis Strait, strikes against the land, is, moreover, the only place on the west coast of Greenland where the walruses occur in great abundance. With the Eskimo, however, walrus hunting has only played an occasional rôle, similar to that of the Polar-bear hunting, which is only carried on at the northernmost and southernmost parts of the west coast.

When mentioning seal hunting one mentions the Greenlander's chief means of subsistence, and the means which provides the community with food, clothes, covering for tents and boats, and fuel. With the Greenlanders seal hunting ranks as the work of a man, and that from which he acquires honour by carrying it out to perfection. The only hunting which, in the heart of the Eskimo, has been able to compete with seal hunting, and even to out-do it, is reindeer hunting. Even CRANZ<sup>2</sup> observed that reindeer meat was their favourite food, which they obtained, however, in such comparatively small quantities that almost all of it was consumed during the chase. This is verified by LARS DALAGER<sup>3</sup> from the district near Godthaab, where the reindeer is the animal chiefly hunted, "to get which a Greenlander sets all else aside". Nowadays reindeer hunting is only a mere ghost of what it used to be in former days. Reindeer are still to be found in several places in North and South Greenland, but only in small numbers, the herds having diminished greatly, after the introduction of firearms. It has become quite extinct in the district of Junianehaab, although the Eskimo, as late as the beginning of the 18th century, there carried on the hunting of reindeer to a considerable extent. It was found there, also, in the time of the Norse men, and in the Sagas there is mention of an island where it could be hunted only by permission of the bishop. Even in the first half of the 18th century the hunting of reindeer played an important and regular rôle with the Eskimo; as every summer they dispersed inland for the purpose of hunting. And the inhabitants of the southern part of the coast travelled in their umiaks up to the region around Godthaab to take part in the hunt. The first missionaries objected very much, however, to this hunting;

<sup>1</sup> GLAHN, p. 279.

<sup>2</sup> CRANZ, Vol. I, p. 189.

<sup>3</sup> DALAGER, p. 19.



because, for a time, it took the Eskimo beyond their influence, and they frequently forgot the morals impressed on them in the course of the winter. Consequently, the missionaries tried with all their power to prevent it, and in the course of time the diminution of the reindeer showed itself to be their best ally, so that at any rate the long journeys outside particular districts have now ceased. As regards the methods of hunting reindeer, very little has been recorded. Bows and arrows were used, but were comparatively soon replaced by firearms. The oldest description of reindeer hunting is due to H. EGEDE<sup>1</sup>; he writes that they "chase them [i. e. the reindeer] by Clap-hunting, setting upon them on all sides and surrounding them with all their Women and Children to force them into Defiles and Narrow Passages, where the Men armed lay in wait for them and kill them. And when they have not People enough to surround them, then they put up white Poles (to make up the number that is wanted) with Pieces of Turf to head them, which frightens the Deer and hinders it from escaping."

In the accompanying illustration the women are seen driving some reindeer between two converging rows of stakes towards a pass, where the men are lying in wait with their bows. The method of driving the reindeer herds into a lake or fjord, or that of lying in wait for them at fords or swimming places, whereat to kill them from a kayak has also been employed, and is mentioned in the literature<sup>2</sup>. The word "*Nettoarsuk*", which signifies a place where to swim, and is known from some localities, probably dates from the times when this method of hunting was employed.

Neither with the hunting of aquatic mammals or with the hunting of reindeer did fishing play its co-ordinate rôle. The food which fishing supplies to the Eskimo has always served them only as a reserve food in times of need, or also a supplementary means of livelihood. The introduction of better European methods of fishing and fishing implements has not been able to effect any changes in this respect.

The catching of salmon in fresh water is carried on with three-pronged salmon spears in the open streams during summer. But the art of building dams, which the salmon pass over during flood-tide, but behind they are retained during ebb-tide, thus becoming an easy prey, was also understood. While fresh-water fishing was homogeneous everywhere in Greenland, sea-fishing differed in North and South Greenland, as "*Angmagsætten*", or the capelin, which is of real importance in South Greenland owing to its great abundance, is not caught further north than Disco Bay. The method of fishing is simple, the capelin, which goes in shoals, close in-shore being scooped up with a catcher. This fishing takes place during spring. In the north other kinds of salt-water fish were as a rule caught through holes in the ice, either with a line of whalebone, or with a line from the skin of the Bearded Seal.

<sup>1</sup> H. EGEDE, III, p. 62; cf. I, pp. 33 sqq. and 43.

<sup>2</sup> Cf. H. EGEDE, p. 33; FABRICIUS, I, p. 239.

The hunting of birds did not have, and could not have had the same importance for the West Greenland Eskimo as for the Polar Eskimo. Sea-fowl cliffs so rich in birds and so easily accessible as those up there are not found along the southern part of the west coast. Just as in Subarctic Alaska, so in Subarctic West Greenland, is the Auk hunted for preference from a kayak, with the aid of a throwing missile, the so-called bird-dart.

The principal features of the economic culture in West Greenland have now been mentioned, especially as evidenced in the writings of the oldest authors from the first days of the Danish colonisation in the 18th century. Even if we have no real knowledge of the West Greenlanders previous to the time when they came into contact with the Europeans, yet we may safely conclude as regards their original culture that it has differed from that of the Polar Eskimo by becoming more and more Subarctic the further we proceed southwards. The summer side of the economic culture has steadily increased in importance, while at the same time the winter side has decreased.

Owing to this adaptation, great claims have been made on the development of water-craft in particular, and in this respect the country has supplied a sufficient amount of the material which, next to the skins, was an indispensable necessity, viz., wood. The conditions pertaining to ocean currents permit the fairly even distribution of drift-wood along the whole coast, decreasing, however, northwards, as far as the regions near Upernivik, where it occurs only sparingly. In Subarctic West Greenland the abundance of drift-wood has even rendered possible the coming into existence of the large, oblong winter-houses for several families — a form of house which, however, in its structure is distinctly reminiscent of the small winter-house built of stone and whales' bones, which is still used, for instance, among the Polar Eskimo (Cf. *M. o. G.*, Vol. 34, pp. 311 sqq., where I have shown and illustrated how the Subarctic Greenlanders' large houses with their family compartments probably must be imagined to have originated).

With the landing of HANS EGEDE at Godthaab in 1721 begins the Danish colonial rule in Greenland. After some trials the Danes succeeded, even as early as in the 18th century, in creating a system of government which considered the material as well as the spiritual and the moral welfare of a primitive people like the Greenland Eskimo. The system has, on the whole, proved to be excellently adapted to the prevailing conditions and has stood its test to this day. One fact which provides evidence of the excellence of the Danish guardianship is that the population has during the last century increased greatly in numbers.

Naturally, the original indigenous Eskimo culture has hereby been greatly modified, and the conditions pertaining to economic culture met with at the present time in Danish West Greenland can only in a slight degree be designated useful scientific material for us, whose object in our investigations just is to find the original conditions.

As regards certain essential points there is, however, constant agreement between past and present. Thus, in the fact that the northern West Greenlanders with an Arctic degree of culture live for preference within the fjords and bays where the winter-ice is permitted to remain unbroken by wind and current the longest possible part of the year, while the southern West Greenlanders with a Subarctic nuance of culture have as strong a bent in the direction of the open sea and the outer coasts. It accords with the constant validity of this point of adaptation that the annual economic cycle is in reality also the same in the different places as in olden days, even if some of the old methods have been replaced with newer ones, showing European influence. Here will be given a few examples of annual economic cycles at Arctic and Subarctic settlements. At the settlement of Umanak at the head of Umanak fjord, Arctic conditions prevail. An ice-covering is formed late in autumn, and from about the middle of December it remains fixed and unbroken. Then was the period for Maupok hunting, but this method plays a very subordinate part here, having been replaced by "ice-net-hunting". During January, February and March "Ice-net-hunting" of seals is continued. In April Utok hunting becomes predominant, and remains so during May and the greater part of June, till the ice breaks up, which generally happens about the 18th—20th of June. When the ice is gone the hunting from kayaks begins and is continued until the sea again is ice-covered.

It is true that the small Hunde Islands south of Disco Island are situated somewhat north of the Arctic circle, but on account of their oceanic situation in the mouth of Disco Bay they have an ice-covering of shorter duration than have localities situated within Disco Bay and in the same parallel of latitude, and the economic life attains a character which is in a transitional stage to the Subarctic life. About nine months of the year, or from April to December, the sea is open, at any rate so much so that hunting is carried on from kayaks. In January, February and March there is ice on the sea, but the ice-covering is partly unreliable as it can break up at any time and drift away seawards, partly intersected with cracks and with openings caused by currents. Therefore Maupok hunting cannot be pursued; but seals may be hunted from ice edges along cracks and openings; the hunters must always take the kayak along with them, to cross the open places or to row to land, should the ice drift seawards. Utok hunting is, however, of importance in early spring. In June and July some members of the settlement travel into the district of Holsteinsborg or into Disco Bay for the purpose of hunting and fishing — it is in West Greenland one of the few remains of the old Eskimo summer-moves.

South of Holsteinsborg the Subarctic economic culture appears in a still more decided form. As a rule, the hunting is carried on all the year round from kayaks, and the methods of hunting on ice are not employed owing to the absence of an ice-covering. The settlements have been moved out to the mouths of the fjords on account of the open water; within a

few of the fjords a few small settlements only are found, for instance in Godthaabsfjord, and in such places the ice may be of some importance as regards livelihood. The annual economic cycle in South Greenland is, therefore, more simple than is the case in North Greenland, and it is especially the case nowadays when the original yearly summer journeys to hunting and fishing grounds further inland in the coast country have been discontinued, barring a few slight rudimentary instances.

The changes in the annual economic cycle, which can be demonstrated in South Greenland, are therefore not so closely connected with the essential changes in the geographical medium as with changes in the occurrence of animals to be hunted, occasioned by the migrations of the various aquatic mammals, the migratory flight of the birds, and the seasonal changes in regard to abundance of fish. From Holsteinsborg to somewhat south of the district of Godthaab, a series of settlements is found, situated furthest out in the Bay, the inhabitants of which, owing to their being able to hunt on the sea all the year round, have developed the use of the kayak to the highest perfection in Greenland. It would be natural to expect to find the most decidedly Subarctic nuances of culture on the southern part of the west coast of Greenland, near Julianehaab; but here the occurrence of the Polar sea-ice ("Storis") can to a certain degree impart an Arctic colouring to the character of the economic culture. But, nevertheless, the economic culture at Julianehaab is decidedly Subarctic.

This is, however, not the case at the only inhabited area of the east coast, round Angmagsalik and Sermilik fjords, which is situated in 65°—66° N. lat. At these fjords and their numerous arms lives a small group of Eskimo, the Angmagsaliks, who were discovered in 1884 by the Danish Konebaads Expedition under G. HOLM; they numbered at that time upwards of 500 souls. Here the geographical conditions are more Arctic in character than is the case on the west coast on the same parallel of latitude. Not only are the outer coasts blocked during part of the year by the "Storis", but in the fjords, also, the winter ice forms barriers; during HOLM's wintering, 1884—1885, the barriers were formed in the middle of January and broke up again in the middle of March. The supply of driftwood is considerable. The Marine fauna in its main features is the same as on the west coast. Reindeer, hares and musk-ox had lived at Angmagsalik, but had disappeared even before 1884. Therefore, the Angmagsaliks are wholly dependent on the sea for their means of subsistence. During summer and autumn they hunt from kayaks. During winter Maupok hunting is carried on, and the Ituarpok hunting described above; during spring Utok hunting is practised. In former times, or probably until the beginning of the 19th century, whale hunting from umiaks was carried on.

Consequently, it is seen both from the geographical conditions and from the cultural features corresponding to them, that the Eskimo culture at Angmagsalik agrees most closely with the conditions on the west side of Disco Bay, or with those of the regions which are situated where the transition

from Arctic to Subarctic takes place. Seen from a purely cultural standpoint, this is evident from the fact that both umiaks and dog sledges are used. The fact of the dog sledge suddenly making its appearance at Angmagsalik after having been absent from the whole of South Greenland could, perhaps, in addition to other ethnographical features, be urged in favour of the opinion which was first pronounced by G. HOLM, and has since been supported by the observations of later authors (C. H. RYDER, G. AMDRUP and W. THALBITZER), that the Angmagsalik Eskimo consist of a mixture of elements, some of which came from the south and some from the north, and consequently have passed along the north and north-east coasts of Greenland. It should, however, be mentioned that the groups had not been entirely outside the sphere of European influence before HOLM's visit in 1884, and before the establishment of the Danish missionary and trading stations in 1894; thus, even before 1884, the Angmagsalik Eskimo had obtained iron through their journeys to the eastern part of the west coast.

Consequently, even Angmagsalik did not in HOLM's time (1884) represent the most original Eskimo conditions in Greenland. These conditions, especially with regard to the annual economic cycle along the various stretches of coasts from Melville Bay in the north and around Cape Farewell to Angmagsalik and further to the extinct groups at Scoresby Sound and Franz Joseph fjord, it has hitherto been impossible to describe except in their more common features.

During later years, however, considerable work has been done, especially by Danish investigators, as regards the ethnographical exploration of Greenland. The majority of the works on the subject have been published in M. o. G. One of the works published elsewhere should, however, be noticed here; it is the Norwegian ethnographer O. SOLBERG's important work "Beiträge zur Vorgeschichte der Osteskimo." In M. o. G. W. THALBITZER has published a new edition of HOLM's excellent and valuable memoir of 1888, and his own extensive descriptions and studies based on ethnographical collections from East Greenland made by G. HOLM, G. AMDRUP and J. PETERSEN. From the northern part of the east coast C. BENDIX THOSTRUP has given an account of the ethnographical results of the Danmark Expedition. From the west coast there has quite recently been published M. PORSILD's studies of the material culture of the Eskimo. The author, who is in command of the scientific Danish Arctic station of Disco, is a botanist, and it was the fact of his having had an opportunity of living closely associated with the Eskimo that led him on to make ethnographical observations.

Among the points of interest, particularly as regards economic culture, which appear from these studies, two points will especially be considered here. The first is, that whale hunting has played a prominent part not only at the west coast of Greenland and at Angmagsalik<sup>1</sup>, but also along the northern part of the east coast, or the districts between Scoresby Sound

<sup>1</sup> G. HOLM and THALBITZER, M. o. G., Vol. 39, pp. 56 and 403.

and Danmarks fjord, whence the Eskimo have now disappeared. This is evident from the whales' bones and baleen found by the Danmark Expedition, and from the use the Eskimo had made of these articles<sup>1</sup>. There also appears to be evidence of the Eskimo in these regions having used the umiak<sup>2</sup>.

The second point of special interest for us is the capture of seals with nets. As regards the employment of this method in Greenland I wrote in 1905 as follows: "In 1857 RINK<sup>3</sup> as a matter of course took it for granted that net-catching had been introduced into Greenland by Europeans, but afterwards he arrived at another opinion, which he communicated to JOHN MURDOCH<sup>4</sup> in a letter. In this he writes: "Small ice nets are extensively used in North Greenland, and, what is strange, they are set exactly in the same manner as at Point Barrow". RINK mentions, further, that nets are mentioned in tales, and that in the Ethnographic Museum in Copenhagen there is an "ice-net" of whalebone which "according to report is said to be one of those which in olden days were used by the Greenlanders". This net was, however, delivered to the museum as late as in 1843, and came from Julianehaab, consequently from a locality where neither whale hunting nor seal hunting on ice was carried on, but where at the present time net-catching is carried on with Danish nets. Consequently, there is some probability of its being an "ice net", as RINK<sup>5</sup> calls it. Perhaps it has been used to catch seals in fjords. A remark made by LARS DALAGER in 1752 may be indicative of this: "Southwards in the country the Greenlanders use the majority of the whalebone, of which however they have not one among them, but must fetch them from Disco Bay." Another probability is, however, that the net of whalebone strings from Julianehaab has its origin in quite another place. In a report from 1856 HOLBØLL states that about 20 years ago a net of whalebone is said to have been found hanging on an iceberg near Julianehaab which "indicates that there are Greenlanders still living who have no knowledge of hemp yarn, and to whom, in consequence, Europeans, probably, are also quite unknown." In the same place HOLBØLL records, that Greenlanders have tales of whalebone nets having been used before the arrival of the Europeans. I think it can be stated with fairly great certainty that in 1843 whalebone nets were not made and used near Julianehaab; but in this case it becomes somewhat probable that the net preserved in the museum and the one HOLBØLL mentions are identical, and if this is the case, the net presents the further interest that it must originally have come from East Greenland where, according to HOLM<sup>6</sup>, whalebone nets were formerly used, and from there it must have

<sup>1</sup> THOSTRUP, p. 336.

<sup>2</sup> THOSTRUP, p. 239.

<sup>3</sup> RINK, I, Vol. 3, p. 200.

<sup>4</sup> MURDOCH, IV, p. 333.

<sup>5</sup> RINK, XIII, p. 212.

<sup>6</sup> M. o. G., Vol. 39, pp. 51 sqq. Cf. THALBITZER, p. 402.

been carried by the Polar sea-ice (Storis) south of Cape Farewell." There can scarcely be any doubt as to the correctness of the hypothesis here expounded by me that the net originated from the east coast (Angmagsalik).

As regards the use of the net in question in West Greenland I shall further draw attention to the peculiar remark made by JOHN DAVIS<sup>1</sup> "They make nets to take their fish of the finne of a whale". Recently a net of whalebone was found in Disco Bay north of Jacobshavn, regarding which the reader is referred to PORSILD<sup>2</sup>, who has made the net-question a subject for further inquiry.

That other eastern Eskimo, besides the Greenlanders, also have carried on net-catching appears to be proved by the fact that PARRY<sup>3</sup> found a net of whalebone in 1821 at a deserted settlement in Lyon Inlet. Lastly, it may be mentioned that DOBBS speaks<sup>4</sup> of a net of whalebone among the Eskimo on the west coast of Hudson Bay between 62° and 65° N. lat.

### The Eskimo of the Melville Peninsula<sup>5</sup>.

In the preceding chapter on the Baffin Land Eskimo it was essentially the groups in the south-eastern parts of the large island studied by BOAS which were taken into consideration. Round about this island, however, there appears to be several other, though less important, centres for Eskimo settlements. Thus, towards the north, by the sea within Bylot Island, where lives a group which is undoubtedly closely connected with the Eskimo who live at Fury and Hecla Strait, which separates Baffin Land from the Melville peninsula. This group (BOAS's *Iglulirmiut*) is, however, again very closely connected with the southernmost inhabitants of the Melville peninsula, for which reason they have here been treated collectively.

Iglulik, which signifies a place where *Iglus* or houses are found, is the name given by the Eskimo to an island which is situated in the eastern part of Fury and Hecla Strait, and is their chief gathering place in these regions (69° 18' N. lat. and 81° 30'—82° W. long.). Eivillik, according to LYON, is the same as Repulse Bay, immediately south of the Arctic Circle, on the coasts and ice of which the large southern Eskimo-group of the Melville peninsula has its centre. BOAS establishes two different tribes in these places, and treats the *Iglulirmiut* and the *Eivillirmiut* separately. The geographical conditions in the two places in question agree rather closely, and so, consequently, do in some measure the economic conditions, wherefore they can here be treated collectively. The two main groups mentioned

<sup>1</sup> A. H. MARKHAM, p. 20.

<sup>2</sup> M. o. G., Vol. 51, pp. 176 sqq.

<sup>3</sup> PARRY, II, p. 100.

<sup>4</sup> DOBBS, p. 49.

<sup>5</sup> The principal works on which the description of this group is based are BOAS, II, X and XI; HALL, II; LYON, I and II; PARRY, II; RAE, I. For a fuller quotation the reader is referred to STEENSBY, I, pp. 79—86.

above have the greatest intercourse with each other reciprocally, while they but rarely come into contact with their kinsmen from the north and east coasts of Baffin Land and from Boothia. LYON found, that there were a few Eskimo only, who had not stayed at both the settlements mentioned above and at the third chief settlement of the tribe, Nuvuk or Wager River. At its winter stations at Winter Island — north of the mouth of Lyon Inlet — and at Iglulik the Expedition came into contact with almost every Eskimo between Nuvuk and Iglulik, and they were all found to be connected either by ties of blood or by marriage, wherefore Lyon has no hesitation in treating them collectively. Now and then they come into contact with more distant groups of Eskimo. Thus, we may mention the Eskimo BOAS heard tell of as living in the north-eastern part of Fox basin, the Baffinlanders from Eclipse Sound and Ponds Inlet, whither the Iglulik Eskimo travelled across the country in 10 days, and whence they now fetch some of their European goods, the inhabitants of the Boothia peninsula, and the inland tribe Kinipetu, west of Chesterfield Inlet, whom, at any rate in more recent times, they used to meet at the whaling station on the Marble Island. Regarding the Eskimo on Southampton Island who did not trade with the whalers the Eivillik Eskimo knew very little, and they appeared never to have come into contact with them. To judge from the Eskimo maps published and mentioned by PARRY and LYON, the tribe in question knew of scarcely anything but Fury and Hecla Strait and the whole of the east coast of the Melville peninsula, with its southern indentations. Of the west coast only a part was known, as it was rarely visited, because, according to Eskimo report, though there certainly were Polar bears and seals yet there were no whales or walruses. Southwards, it is difficult to decide the extent of the tribe's pristine knowledge of the country, because its members had long been in the habit of making trading journeys on the ice as far as Fort Churchill. Provided the map published by HALL, which was drawn by an Eskimo at Repulse Bay in 1865, can be taken as a standard by which to judge the tribe's geographical knowledge, then this extends from Fort Churchill to Lancaster Sound. All which lies east and west of this coast line, with the exception of Rae Isthmus, is unknown or wrongly comprehended. The fact that the coast of Greenland is found on the map indicates however the intermixture of something recollected from European maps. The area within which the tribe travels about and hunts may be defined then as including solely the east coast of the Melville peninsula from Fury and Hecla Strait to Wager River, and Rae Isthmus as far as the south-east end of Committee Bay.

The Melville peninsula, which mainly consists of a range of granite hills merging towards the east into a silurian plain, has generally a low coast, with the exception of the indentations under the Arctic Circle, where the primitive rock appears and forms higher shores. On the other hand, at Fury and Hecla Strait the limestone is predominant, and the island of Iglulik consists of a slate-like limestone, and should be regarded as "an



immense swamp full of lakes and covered with stunted herbs." The prevalent north-west wind keeps the coast fairly free from the drifting ice-masses, and the tidal difference, which according to HALL is 2 metres at Southampton Island and still greater further towards the west, causes a strong current in the narrow waters, with the result that, with the exception of an ice-belt along the land and over the indentations, there is open water in the middle of the strait during the whole, or at least the greater part, of the winter. In December 1864 HALL went 12 kilometres from land to arrive at the ice edge in Rowe's Welcome. Floating masses of ice drifted from north to south, grinding along the jagged edge of the fixed ice. Numerous walruses were seen on both sides along the ice edge; and they were eagerly hunted by the Eskimo. On the whole, the entire stretch of coast from Nuvuk to Iglulik abounds in walruses. As regards the latter region this fact has been pointed out by PARRY and LYON, and it is moreover fully borne out by the experiences of the various expeditions and by the numerous accounts of the hunting of these animals. It is only east of the Melville peninsula that they occur so abundantly; west of the peninsula they do not occur at all, according to Eskimo report; and in accounts of travels no reference is made to them from the Gulf of Boothia and Committee Bay. Of species of seal are found, in addition, the Bearded Seal and Ringed Seal in great abundance. Of whales, White Whales and Narwhals are mentioned. The two large representatives of the terrestrial fauna, the reindeer and the musk ox, play an unequal rôle as regards the Iglulirmiut and Eivillirmiut, the limit of the range of the musk ox being at about Rae Isthmus.

Regarding the Iglulirmiut PARRY says that only a few of them have taken part in the slaying of a musk ox, while all of them have killed large numbers of reindeer. In the autumn, when the ground is frozen and passable, the latter wander southwards in great quantities, and in May and June return again to the Melville peninsula in a famished and lean condition. The narrow Rae Isthmus, the bulk of which is further reduced by a transverse series of freshwater lakes, is the place resorted to by the Eivillik Eskimo for the purpose of carrying on reindeer hunting.

The fact peculiar to the mode of living of the Eivillik Eskimo is that they have access to musk-ox hunting, which is purely land-hunting, and lastly their "economic" journeys are determined by the fact of there being an uncommonly great abundance of walruses along the east side of the Melville peninsula, and in the straits between the continent and Southampton Island.

A determination of the mode of living and of the dwelling places of the tribes in the different seasons of the year must, however, have reference to the Eivillik group in particular, as this has been visited several times, and at all seasons of the year, while our knowledge of the Iglulik group is restricted to the observations of PARRY and LYON, whose ships *Fury* and *Hecla* were lying in the neighbourhood of Iglulik from the summer of 1822

to the spring of 1823, and of C. F. HALL, who in 1867 and 1868 made sledge journeys from Eivillik to the Fury and Hecla Strait.

PARRY and LYON were also the first to reach Repulse Bay, and to pass the winter (1821—1822) on Winter Island north of the entrance to Lyon Inlet. This expedition had gone north of Southampton Island; an attempt made by LYON in 1824 to go south of the island failed, as the ice obliged him to return from within Rowe's Welcome in  $65^{\circ} 30' \text{ N. lat.}$  Dog sledges were greatly used by the succeeding expeditions. For instance by JOHN RAE, who went from Fort York northwards along the coast, and passed the winter of 1846—47 at the head of Repulse Bay in the so-called Fort Hope. This was also the head quarters of C. F. HALL during the years 1864—69, and this was the starting point for his excursions. Since then this region has scarcely been visited. SCHWATKA's route of 1879 went from Depot Island across the country to the mouth of Back River, and touched only the south-west boundary of the region. In these waters the American whalers do not go so far northwards, and this applies also to the Canadian expeditions, for instance the "Neptune", under A. P. Low, which passed the winter of 1903—1904 in Fullerton Harbour, on the mainland side, at the south end of Rowe's Welcome.

According to RAE's and HALL's concurrent experiences the Eivillirmiuts pass August and September on Rae Isthmus, at the lakes there, where they pass the time partly in salmon-fishing, and partly in reindeer hunting from a kayak when the reindeer herds swim across the lakes and rivers. At several places on the isthmus the travellers came across fences or long rows of stones, which were set up to lead the reindeer herds into the water where the Eskimo were lying in wait with their kayaks. These fences were also observed in Fury and Hecla Strait, and this method of hunting is further mentioned by PARRY. At this season they live in tents of reindeer skin. The large quantities of reindeer meat which is thus procured is set aside as supplies, and it appears that these supplies are brought to the coast of Repulse Bay, where the first part of the winter is spent. Both in the winter of 1865—1866, and in that following, HALL found that the Eskimo, when the reindeer hunting had ceased, resorted to Repulse Bay, where, during the following months, they lived on venison from their stores, and on the few salmon they caught through the openings in the ice. For the rest, the group HALL knew spent the winter of 1865—1866 in snow houses; and, in one which was particularly large, they gathered almost daily to hold festival. The reason why the Eskimo in the autumn went down to the sea with their stores was for the purpose of hunting the walrus on the frozen waters. Such autumn hunting of walrus is mentioned by HALL, who, however, adds that no hunting is carried on so long as the stores last. In 1866 these supplies probably were consumed about February 8, and in 1869 even in January, because the Eskimo then broke up to live scattered over the ice. According to RAE's observations this happened in 1847 on February 20, and this also agrees well with the fact that PARRY and LYON

in 1822, near Winter Island, were for the first time visited by the Eskimo on February 4. It appears to be certain that what determines this dispersal of the Eskimo is the amount of the supplies collected during the summer; thus, the more successful the reindeer hunting has been the longer does the winter sojourn last. When the supplies have been consumed it is necessary to resort to seal hunting on the smooth ice, or to walrus hunting, which is carried on at the ice-edge in the straits.

During February and the following months the Maupok method is the one that is mentioned. When LYON, on February 4, 1822, paid a visit to the snow houses of the recently arrived Eskimo, he found numerous evidences of seal hunting having newly been carried on, and during the time which ensued the men were either busy hunting at the seal holes or hunting walruses, if there was open water in the neighbourhood. Later on, in the spring and in the beginning of summer, they apply themselves to the hunting of seals which comes up upon the ice, and this hunting is continued until the ice breaks up in the beginning of July.

As regards walrus hunting, there is occasional mention of hunting not only during all the winter months, but also in the summer in open water. As the walrus herds found between the drifting ice-cakes are hunted both summer and winter the methods of hunting are also, on the whole, the same. During winter they must make journey on sledges to the ice-edge in the middle of the strait, taking the kayak on the sledge. During summer some of the Eskimo set out direct in their kayaks and lift these up onto a cake of ice, which they row towards the herd, after having fastened the harpoon line to the ice. When the wounded walrus is sufficiently exhausted, the Eskimo goes out in his kayak and kills it with his lance. From the ice-edge, during winter, the same method is used, or it is harpooned, killed, and drawn up on the ice by modes of procedure similar to those used by the Polar Eskimo. HALL mentions walrus-hunting during the summer season in open water at the head of Lyon Inlet, but he does not give a detailed description of the mode of hunting. Seal hunting from kayak is of little importance, and it appears, according to BOAS, that only the bladder dart is used on these occasions. With this tribe umiaks are not mentioned, and PARRY and LYON emphasize the fact that it does not occur, although the tribe knew the word "umiak", whereby it designated the English ships. The kayaks are described as small and light and are paddled with double-bladed paddles. LYON saw a kayak of which the ribs consisted of lashed together fragments of the wood of Polar willow. The almost entire want of drift-wood, and the fact that the greater part of the summer is spent near lakes and rivers, is evidently the reason why no umiaks are built. Besides, while travelling in the interior, the kayak is easier to carry, and is necessary as regards the reindeer hunting. In the case of passengers or goods having to be conveyed across a piece of water, two kayaks are lashed together, which provides a serviceable ferry-boat. The dog sledge is, however, the chief means of conveyance for travelling, and can be used during nine

months of the year. LYON mentions a sledge journey which, in 1823, was made on July 26 on the ice-foot along the island of Iglulik. As wood can but rarely be obtained, the sledge runners are for preference made from the jawbone of a whale. But specimens of runners made from frozen walrus skin are also mentioned.

The rest of the implements and the cultural objects of the tribe are only incidentally mentioned, because they have impressed the observers as being more particularly those common to the Eskimo. PARRY and LYON mention fire struck with pyrites and by drilling in wood, paddles made of fragments of wood lashed together, bows and arrows, and a peculiar form of spear for reindeer hunting in water. According to LYON and RAE these Eskimo wear deerskin clothes. At Lyon Inlet PARRY found a net of whalebone, regarding which he says that it had large open meshes, two inches in diameter, and was made of strips of whalebone lashed together with thongs of the same material. As he did not see it in use, and besides, found it at a deserted settlement, it was impossible to state whether it had been used for fishing or for the capture of the Ringed Seal. It is more probable that it was used for the latter purpose.

It appears that fishery can be carried on at all seasons and with slight trouble. LYON mentions hook-fishing in ice-holes and says that less skill is used in procuring fish than any other kind of food. On September 27, 1822, he saw two boys fish through the ice on a lake, using an ivory fish as an artificial bait. HALL observed the same method of fishing on lakes, in January 1866 and April 1863. Salmon fishing with a salmon spear in open water is recorded from Rae Isthmus in July 1847 and 1868. RAE mentions stone dams about  $1\frac{1}{2}$  metre in height which are set up at the mouth of streams, slightly below high-water mark, to cut off the retreat of the salmon during the ebb of the tide. The salmon are caught with a long spear, about 2 metres in length, resembling a three-pronged fork, of which the side prongs are longer than the middle one, and are, in addition, each provided with a barb.

Four kinds of dwellings are recorded: the tent, which is sometimes said to be of reindeer skin, and sometimes of seal or walrus skin; the snow house; the house of freshwater ice, or of a combination of freshwater ice and skin, dwelt in during autumn before there is snow enough to build a snow house; and lastly the more solid winter house of stone and bone. Such a house is recorded both from Iglulik and from Repulse Bay. On a group of islets at the head of the latter bay PARRY found no less than 60 houses built of stone; the stones were laid one above the other in regular circles  $2\frac{1}{2}$ —3 metres in diameter. At Iglulik the lower part of similar houses were built of stone, and the upper part of whale and walrus bones, which slanted inwards and met at the top. The interstices between the bones and the whole of the outer side were covered with turf, and, during winter, with snow in addition. The entrance faced south, and consisted of a passage 3 metres long and 0.6 metre high, made of flat stones, which were likewise

covered with turf. The platforms, which were raised 60 cm. from the floor, took up about one-third of the interior of the house at the back. Besides the dwelling houses, PARRY describes some small houses or chests, 1.8 metre long and 0.9 metre broad, which were used as food depots. But what is most remarkable, as regards house-building at Eivillik and Iglulik, is not the variety in construction, but the use of the permanent festival and meeting houses (kashims). Such houses are often considered to be peculiar to the West Eskimo, but LYON records the use of them from Iglulik, and HALL from Repulse Bay. The especially large ground-plan of a deserted house in Repulse Bay, mentioned by PARRY, is probably similar to that of a meeting house. In the meeting house observed by HALL in 1866, all the Eskimo of the village assembled daily during January and the beginning of February to hold festival until the stored up supplies were consumed. LYON believes that the house in Iglulik, where the inhabitants assembled to hold festival when a whale had been killed, or on any other joyful occasion, is a social relic from former times, and gives a short description of it (LYON I, p. 448).

In connection with what has been said above regarding the houses on the Melville peninsula it is worthy of note that similar winter houses have been found among the isolated little group of Eskimo on Southampton Island. These houses are built of stones and whales' bones, and are semi-subterranean. The ground-plan is almost circular in form and almost in the centre of this is a stone platform (about 60 cm. high), from the middle of which "a pillar built up of stone slabs rises to the roof, which is formed of jaw-bones and crown-bones of whales, which extend from the outer wall to the central support". Some of the houses have near the passage a small out-house which is used as a store house.

With the exception of an American whaler, who in 1865 is said to have met a group of Eskimo in five tents on the coast, G. F. LYON, on his voyage south of the island in August 1824, was the first to meet these people. On the south-western side ( $62^{\circ} 30'$  N. lat.,  $82^{\circ} 49'$  W. long.), about 2 kilometres from land, he met an Eskimo who, in place of a kayak, was navigating three inflated seal-skins; he sat on the middle one, and had his legs, which were provided with sealskin boots, up to his knees in the water; and was paddling with a double-bladed paddle of a whale's bone. LYON found the following implements among them:—Flint knives with bone handles, bows made of several pieces lashed together, harpoons with shafts of whale rib, cooking vessels made of thin slices of limestone very roughly cemented, and sledge runners of a whale's bone. The fact that the group which LYON met, and which consisted of about 20 individuals living in two tents, had no kayak is evidently solely due to absence of wood, and by no means to want of knowledge of kayaks as LYON thinks. All the more so as he himself found not only a piece of wood carved to represent a kayak, but in one place, also came across stone posts which are used by other Eskimos (at Eivillik and Iglulik also) to place their kayaks upon. Nor were

umiaks found, but they used the word to indicate LYON's ship. Judging from the number of bones LYON found, the reindeer appears to be their chief article of food, but he also found stores of walrus and seal blubber. Moreover, the tents were pitched along a small stream which was confined by a dam, behind which they caught salmon with a fish spear. In the same place were found, along the coast, ranges of stones which evidently served as a fence when hunting reindeer herds.

In 1898 the above-mentioned Captain COMER visited the south-west coast of Southampton Island, near the Bay of God's Mercy, and met natives who told him that about the year 1830 a group from the island had visited the mainland across Rowe's Welcome, which was at that time entirely ice-covered. In 1898 the entire population of the island numbered 58 persons. A few years later a Scottish whaling company established a station on the south coast of Southampton Island, and landed a group of Eskimo from the north side of Hudson Strait. These Eskimo, who were armed with modern rifles, destroyed the reindeer hunting to such an extent for the islanders who were armed with bows and arrows only, that these could not procure for themselves sufficient autumn hunting and winter supplies, but all died from hunger during the winter of 1902.

### Kinipetu<sup>1</sup>.

One of the most interesting Eskimo tribes is the Kinipetu Eskimo, but unfortunately it is the one which is least known. The tribe lives in the region between Chesterfield Inlet and Back River, which means that it is an inland tribe, and it is possible that originally the whole tribe did not go down to the sea-coast every winter for the purpose of hunting seals. In later years the wish to trade and to enter the service of the whalers has undoubtedly been instrumental in promoting journeys to the coast.

Their hunting and fishing grounds proper are the districts around the series of lakes which, westwards, form a continuation of Chesterfield Inlet and the group of lakes in the intermediate part of Back River. Kinipetu Eskimo have been met with both at the sea-coast and at the Lake-Garry-group. BACK, to be sure, met no members of the tribe, but he frequently came across traces of them between 101° and 102° W. long.; as for instance, several fences for reindeer hunting, fragments of a kayak and tent-rings. JAMES ANDERSON, on his journey down in July 1855, met Eskimo at the western end of Lake Pelly, and between Lake Pelly and Lake Garry. On his return journey in August he again met this group of Eskimo, which consisted of about 15 individuals. From the amount and quality of European goods found among them J. ANDERSON concluded that they must belong to the tribe which came to Hudson Bay for the purpose of trade. He found

<sup>1</sup> Principal authors consulted are: JAMES ANDERSON; BACK; BOAS, XI; GILDER; KLUTSCHAK; KING; W. PIKE. Cf. STEENSBY, I, pp. 87-88.

no sealskin among them however. They were dressed in clothes made from the skin of the reindeer and the musk ox; and, according to his statement, even their kayaks were made of reindeer skin. Both J. ANDERSON and KING are of opinion that the Eskimo whom they, with 20 years intervening, met in the district near Lake Garry belonged to a tribe that wandered about round Chesterfield Inlet. That they have not come from the north and do not belong to the Eskimo the Expedition met at the mouth of Back River is evident from what J. ANDERSON observed, viz., that the Lake-Garry-Eskimo did not possess articles from the FRANKLIN Expedition, while he found many such articles amongst the Eskimo from the North whom he met at the mouth of Back River.

It is an interesting question whether the Eskimo of whom WARBURTON PIKE, in 1889, found traces at the upper group of lakes which are part of Back River,  $65^{\circ}20'$  N. lat. and  $107^{\circ}$  W. long., belong to Kinipetu or to a tribe which visits these districts from Bathurst Inlet. As these Eskimo have never been met with it is impossible to decide the question; but WARBURTON PIKE's observation is of importance because it shows that the "Barren Grounds" outside their interior are not entirely uninhabited, but that every large group of lakes is occupied by the Eskimo. In the region which he traversed, WARBURTON PIKE found the boundary between the Indians and the Eskimo to be Musk-ox-lake ( $64\frac{1}{2}^{\circ}$  N. lat.,  $108\frac{1}{4}^{\circ}$  W. long.), which is visited from the north by the Eskimo and from the south by the Red Indians. But during many years the two people had not been in contact with each other, and the Red Indians were in constant fear of meeting the Eskimo.

Besides these few scattered, and in part uncertain, notes on the Kinipetu Eskimo, we have a more accurate account of them which dates from one of the members of the SCHWATKA Expedition, WILLIAM H. GILDER, who, in February or March 1879, spent a week among them on a lake situated north-west of Marble Island, consequently, in the neighbourhood of Chesterfield Inlet. Here they dwelt in snow houses, and lived on fish and reindeer meat. GILDER says that their chief article of food is reindeer meat, just as walrus and seal meat is that of the Eivillik Eskimo. J. W. TYRRELL who has travelled around the Kinipetu territory on hunting excursions describes reindeer hunting as the favourite occupation of these Eskimo, and mentions several methods of hunting, amongst which the most important consists in luring the reindeer during their regular wanderings from north to south into a fenced-in enclosure, or out into a lake where the hunter lies in hiding with his kayak. Seal hunting, however, is also carried on, and in the spring of 1880 the SCHWATKA Expedition found them hunting seal on the ice. During GILDER's visit they were evidently yet living on the supplies from the previous summer and autumn; and every night they assembled in their meeting house, an especially large snow house which was 7.6 metres in diameter and 3.7 metres in height, and where they sang to the accompaniment of drums, or amused themselves with various games. A social pecu-

liarity, or a custom, which otherwise is only heard of from the western Eskimo consisted in the men eating together in a snow house to which no women were allowed admittance.

During later years, as already mentioned, there has been some more intercourse with the whalers. It is Captain COMER's opinion that the southernmost Eskimo tribe on the west side of Hudson Bay is called *Sauniktumiut*, and lives to the south and west of Chesterfield Inlet. This tribe "depends almost wholly on the caribou for food and clothing, while sea-mammals are hardly used at all. They also hunt musk oxen." As regards the Kinipetu Eskimo at Chesterfield Inlet, COMER says that they, also, make little use of sea-mammals, but subsist principally on caribou and musk ox. During autumn and winter salmon are caught in the lakes with fishing-harpoons, which are handled through holes made in the ice.

### The Eskimo around Netchillik<sup>1</sup>.

The region which is here designated Netchillik is in the main identical with the islands and coasts which are situated in and around the estuary of the Back River and its continuation in Ross Strait between Boothia and King William Land, and Simpson Strait between the latter and the Adelaide Peninsula. The word Netchillik means a land where the Ringed Seal lives, and is used especially regarding a locality on the Boothia Isthmus, where, among the Eskimo, the word indicates not only the land, but also a sea and a river, and where one of the most numerous Eskimo groups of the region has its favourite place of residence. To Netchillik, in its widest sense, must in addition be reckoned the east coast of Boothia Isthmus: that district belonging to the Netchillik-Eskimo's hunting grounds. The first European to visit the region in question was JOHN ROSS, who, in his ship "Victory" passed the winter on the east coast of Boothia Isthmus, and during spring and summer in 1830 and 1831 was frequently visited by the Eskimo. In 1833 BACK came from the south along the river which now bears his name, and turned back at Point Ogle (95° W. long. and 68° N. lat.). The year after, the same point was reached by sea, from the west, by SIMPSON. In the summer of 1847 the east coast of Boothia Isthmus was visited by JOHN RAE, who had wintered at Fort Hope in Repulse Bay. In September 1846 the ships belonging to the unfortunate Franklin Expedition were beset in Victoria Strait in about 70° N. lat., and in April 1848 they were abandoned a few more minutes to the south. The officers and crew, 105 souls in all, tried along the west coast of King William Land and across Simpson Strait to reach Back River, in order to make their way along this to inhabited districts, but on the way and before reaching

<sup>1</sup> AMUNDSEN; BACK; BOAS, II and VIII; GILDER; HALL, I; KING; KLUTSCHAK; MC. CLINTOCK; C. PETERSEN; RAE, I; J. ROSS, I; SIMPSON. Cf. STEENSBY, I, pp. 89—99.



68° N. lat., they all perished of hunger, cold and disease. During the following years these regions were visited by several Search Expeditions. In the summer of 1855 the Factor of The Hudson Bay Company, JAMES ANDERSON, was sent northwards along Back River, but in the beginning of August he turned back at about the middle of the east coast of the Adelaide Peninsula, after having found several articles belonging to FRANKLIN's ships in the possession of the Eskimo at the northernmost channel of Back River, but no traces of living Europeans. MC. CLINTOCK, who had the Danish-Greenland interpreter, CARL PETERSEN, on board, sailed in 1858 into Bellot Strait, whence, in the spring of 1854, he travelled in dog sledges southwards along the west coast of Boothia, and round about King William Land, where on the west coast he found in a cairn a record written by FRANKLIN's crew. In the spring of 1866, C. F. HALL made a sledge journey from Repulse Bay, along the south coast of Boothia Gulf, to find relics of FRANKLIN's Expedition, but turned back before reaching Boothia. Only on a later journey, in the spring of 1869, did he succeed in getting as far as King William Land. In 1879 the Netchillik region was visited by the American, Lieutenant SCHWATKA, who was sent out to make thorough investigations regarding the fate of the FRANKLIN Expedition. An account of the expedition was given by his fellow-travellers, W. H. GILDER and H. W. KLUTSCHAK. Lastly, the Norwegian Gjøa Expedition under ROALD AMUNDSEN spent two years, from 1903—1905, in a bay on the south-east coast of King William Land.

The area of the Netchillik district is not so high or mountainous that its surface is anywhere covered by such immense masses of perpetual snow that calving glaciers can be formed. Nevertheless, the country consists chiefly of primitive rock, as also do the numerous smaller islands and the majority of the coasts. Groups of rocky isles occur on both sides of Boothia Isthmus and in Simpson Strait, and, in addition, granitic islets are mentioned as occurring in the estuary itself, and in Pelly Bay. According to KLUTCHAK the east bank of the estuary is granitic, while the Point Ogle Peninsula, on the west side, is low and sandy. MC. CLINTOCK found that the west coast of Boothia, south of 71° 10' N. lat., consisted of granite, and Ross on May 31, 1830, travelled in a sledge along a granitic rocky coast on the east coast of Boothia Isthmus, which "closely resembled the Swedish coast between Gothenburg and Strömstad". Also inland, the granite protrudes along the banks of the lakes, of which there are specially many in Boothia Isthmus. According to MC. CLINTOCK's description King William Land is "extremely desolate, and its surface is studded with numerous lakes and pools."

The sea which is surrounded by these countries, and in the above has been named after Back River, but which should rather be called Netchillik Sea, is naturally covered with ice during the greater part of the year. As regards the nature of this ice, it is evident from the geographical conditions and from the experiences made by the expeditions, and also from communications imparted by Eskimo, that it is a smooth winter-ice, which

breaks up every summer and again freezes over every autumn. King William Land and the islands in the straits hinder the great masses of ice which come drifting from the north-west from entering Netchillik Sea. MC. CLINTOCK was of opinion that if Franklin, instead of taking his ships into the pack-ice west of King William Land, had gone east of the latter "he would probably have taken them safely through to Bering Strait." And the Gjøa Expedition has shown that this route can be navigable, at any rate as regards a smaller ship.

During April—May, 1859, MC. CLINTOCK travelled in a sledge across this lake throughout its entire length from Matty Island in Ross Strait to  $67\frac{1}{2}^{\circ}$  N. lat., and writes regarding the condition of the ice (I, p. 270): "Since our first landing upon King William's Island we have not met with any heavy ice; all along its eastern and southern shore, together with the estuary of this great river, is one vast unbroken sheet formed in the early part of last winter where *no ice previously existed*."

MC. CLINTOCK himself did not see the Netchillik Sea free from ice, but he learnt from the natives that this is, as a rule, the case every summer, which agrees with SIMPSON's experiences from August 1839, and with BACK's from the end of July 1833, as also with that of the Gjøa Expedition from 1903—1905.

The vegetation, which is necessarily Arctic in character, is not of much interest in this connection. With the exception of some berries it does not provide food, and only an inconsiderable quantity of wood for the use of the Eskimo. Drift-wood occurs in small quantities. Among the few cases of the occurrence of drift-wood reported by the various expeditions may be mentioned the piece, 2.7 metres in length, which BACK, according to KING, found on the east coast of the Adelaide Peninsula. The only regular supply of wood which can possibly be had must be conveyed along Back River, which undoubtedly tears off the vegetation along its banks and carries it to its mouth. This assumption agrees with what BOAS ascertained from Netchillik, that there the inhabitants got their wood from the Eskimo who lived towards the south-west.

That the Netchillik Sea is rich in Ringed Seals may be known even from the name, and this species of seal is also the only one which occurs in great abundance. Neither walruses nor walrus hunting is mentioned west of the Melville Peninsula, wherefore it may safely be concluded that neither is this animal to be met with west of Boothia. Whales and whale hunting are as little mentioned, and it is probable that these animals, on their wanderings, never, or extremely rarely, reach these out-of-the-way waters. From Bellot Strait there are records of herds of White Whales, but even if Franklin Strait now and then has open waters, which according to MC. CLINTOCK is not the case every summer, yet in these particular years they scarcely reached so far southwards.

The land fauna is characterized both by the presence of musk ox and reindeer, of which especially the latter are important to the inhabitants on

account of their abundance and their wanderings, which wanderings, owing to geographical conditions, become highly regular. During spring the reindeer wander in herds northwards across Boothia Isthmus, and return again during autumn. From Simpson Strait there are records of wanderings over the ice to and fro between King William Land and the mainland. In August 1839 SIMPSON found the former swarming with reindeer, while MC. CLINTOCK in May 1859 came across extremely few, which gave him occasion to correct SIMPSON. The explanation may be had from KLUTSCHAK and GILDER, who in the month of June saw the reindeer wander northwards across the Strait, and, in the beginning of October, saw them return again to the mainland.

According to this description of the natural conditions of the Netchillik district there can be no doubt that there must necessarily be two focuses for Eskimo settlements, viz., Boothia Isthmus and Simpson Strait. The two tribes in question correspond to these two localities: the Netchillirmiut to Netchillik and the Ugjulirmiut to Ugjulik near Simpson Strait. The separation into these two tribes is owing to the names which the Eskimo have given themselves, but most of the expeditions found people from Netchillik and from Ugjulik living indiscriminately. BOAS is of opinion that this state of affairs was not brought about until the destruction of the FRANKLIN Expedition, when the rich booty enticed the Netchillirmiut to the west coast of King William Land, which they had not previously been in the habit of visiting. This is undoubtedly correct, previously even the Ugjulik Eskimo were not in habit of visiting the ice-blocked west coast of King William Land. This is evident from MC. CLINTOCK's observation that, north of the south-western point of the island, Cape Crozier (about  $100^{\circ}$  W. long.), all traces of the Eskimo ceased. Towards the south-west, the settlements extend along the west coast of the Adelaide Peninsula as far as about  $98^{\circ}$  W. long., where SIMPSON, coming from the west, found the traces to become frequent. Near the long Sherman Inlet, the SCHWATKA Expedition found, in September 1879, the biggest camp they had met with during the whole of their journey. On Boothia Isthmus, knowledge of the coasts extends as far as Bellot Strait, and the Netchillik Eskimo have names for the localities on the west and east coasts, even if they are rarely visited. Eastwards the Netchillik Eskimo wander only to the Simpson Peninsula, which, however, does not prevent their now and then coming into connection with the Eivillik tribe.

There is a cultural reason for considering the inhabitants at Hayes River and at the numerous rapids in the neighbourhood of the mouth of Back River separately. The occurrence of these Eskimo with their mode of livelihood is one more proof of the fact that, wherever the locality allows of it, an inland tribe is developed which lives by salmon fishing and reindeer hunting, and only makes short visits to the coast. The range of these Eskimo, BACK's Ukusiksillik and BOAS's Ukusiksalirmiut, named after the name which they gave to their country in the presence of SCHWATKA, is limited towards the south in  $66\frac{1}{2}^{\circ}$  N. lat. by the windings of the Back River, which so rarely expand into lakes, and it is evidently they who

supplied the Netchillik Eskimo with wood and soapstone. By way of exchange they have probably obtained blubber for fuel and seal skin for kayaks.

The Netchillik Eskimo, or the inhabitants of Simpson Strait and Boothia Isthmus, spend the winter in the neighbourhood of the two localities mentioned above, and carry on seal hunting on the ice. According to Ross, January and February were spent in this way. In the first days of March they began to disperse in all directions over the ice, in order to continue the seal hunting, and the hunting of the newly born woolly young of the seals, with greater chance of success. The Eskimo who in the beginning of January 1830 had commenced to hunt seal and to live in snow houses on the ice in the neighbourhood of Ross's winter quarters, in the beginning of March again divided into two parties, which removed elsewhere on the ice towards north and south, and during the spring the Expedition now and then came across groups of Eskimo moving here and there. These spring wanderings may be of considerable extent. In March 1859 MC. CLINTOCK, on the ice between King William Land and the coast at the magnetic north pole, came across Eskimo who lived in eight snow houses, and had just returned home from a seal hunt on the ice. At the end of April he met another group of Eskimo who had visited Tasmanian Islands ( $71\frac{1}{4}^{\circ}$  N. lat.), and who were now on their return journey to Boothia Isthmus, supporting themselves on the way by seal hunting on the ice. It appears, on the whole, from accounts of travels, that it was the spring months, which on account of the firm condition of the ice the English expeditions also regarded as most suitable for sledging expeditions, which formed the wandering period proper for the Eskimo. In April 1866 HALL met Netchillik Eskimo on the east side of the Simpson Peninsula, in Boothia Gulf, and, as mentioned above, they must now and then extend their journeys as far as Eivillik (on Rae Isthmus). But the proper field of action of the tribe during spring is the large expanse of winter ice on the Netchillik Sea, which, both as regards navigability and the presence of Ringed Seals, satisfies all their needs. On May 4th, 1859, MC. CLINTOCK found first two, and then several more, recently abandoned snow houses on Matty Island ( $95^{\circ}$  W. long.,  $69\frac{1}{2}^{\circ}$  N. lat.), where numerous remains of seals were lying about, and where he could gather "blubber in abundance" for his own use. From the direction indicated by the track of the sledges on which the Eskimo had departed he concluded that they had gone eastwards to Boothia Isthmus. A few days afterwards he met, on the coast of King William Land, Eskimo who were on their return journey after a visit to the wreck of FRANKLIN's ships. From the district around Simpson Strait there are extremely few observations to hand as regards this season of the year. But there can be no doubt that the numerous recently abandoned snow houses which SCHWATKA, about June 1st, came across on Montreal Island at the east coast of the Adelaide Peninsula had belonged to the Ugjulik tribe. It is true, KLUTSCHAK calls them Netchillik; but this is partly because he had not met the Eskimo

themselves and heard whence they came, and partly because both he and GILDER use the names Ugjulik and Netchillik indiscriminately. As regards the distribution of the rest of the Ugjulik Eskimo during May and the beginning of June 1879 KLUTSCHAK states that they live dispersed in small groups of two or seven families along the north and west coasts of Adelaide Peninsula, where, at this season of the year, they subsist by seal hunting and fishing. SCHWATKA places them opposite King William Land along the north coast of the Adelaide Peninsula from Montreal Island to Point Grant, north of Sherman Inlet. MC. CLINTOCK's observations from 1859 and Ross's from the years 1830 and 1831, as also the information he gained by questioning the Eskimo, show that late in spring the Netchillik Eskimo proper again gather together near Boothia Isthmus. In May and June Ross came across them living in snow houses on the ice out in Spence Bay and Josephine Bay on the west coast, and in Toms Bay on the east coast. All these bays are indentations which extend far inland, and are instrumental in narrowing the isthmus. Here the Eskimo occupied themselves partly in catching salmon and small torsk, both of which they caught through openings in the ice, and partly in seal hunting.

The Eskimo evidently have a twofold reason for gathering together near Boothia Isthmus late in spring. Firstly it is necessary, before the ice becomes rotten and difficult to traverse by means of sledges, to make for the coasts of the mainland, and there replace the Maupok hunting with the hunting of seals which come up onto the ice. There is, moreover, this particular reason for the places of gathering being on both sides of Boothia Isthmus and along the south coast of Simpson Strait, that the Eskimo must be at this particular place in order to be able to begin hunting reindeer when the latter come from the south, and to be able to begin catching salmon as soon as the fresh water becomes ice-free.

So long as the Eskimo live upon the sea-ice, or at any rate in the immediate neighbourhood of it, they always use snow houses as dwellings. In 1830 Ross saw snow houses in a fjord as late as June 1st. They were not, however, closed at the top with an arch of snow, like the snow houses proper, but were covered with skins. A week afterwards he met the group which had been living in the above-mentioned snow houses near Lake Netchillik, and there it lived in skin tents, and this was the mode of dwelling which was found to be constantly used near lakes and rivers where the Eskimo lived during the whole summer. The fishing of salmon yields rich returns. The fish is dried and stored away under stones and blocks of rock to serve as a supply for winter use. But the chief summer activity of the men is reindeer hunting, which is carried on from kayaks at such places on rivers, lakes and long, narrow fjords as the reindeer herds must swim across. Around Netchillik it is also customary by erecting rows of stones, to entice the deer into an ambush or into a lake. Such rows of stones are recorded from the south coast of King William Land and from the district around Back River. Consequently, the

Netchillik Eskimo do not disperse accidentally during summer, but take up their abode in such places where there are good conditions for reindeer hunting and salmon fishing. On Boothia the two transverse rows of lakes on the isthmus are the places mostly visited, and of the lakes, to judge from what is known, Netchillik is the one where the majority of them gather together. A narrow, river-like indentation (Skagavok) is also visited. Ross's Expedition, on its sledge journeys across the isthmus, frequently found kayaks hidden on islets, or by the banks of lakes, where they remained during the winter, covered with stones and snow. In this district, where they only resort to the sea when it is covered with ice, the umiak is never mentioned, and the kayak is only mentioned in connection with reindeer hunting in fresh waters, and as a ferry when travelling during summer. It is reported from Simpson Strait, that the Eskimo can cross the strait on a ferry made by lashing together two or more kayaks side by side. Otherwise the Ugjulik Eskimo spend the summer in reindeer hunting near the inner waters of the Adelaide Peninsula, or on King William Land. The musk ox is of less importance than the reindeer, and is hunted only casually; but it is owing to confusion when some authors have stated that its meat is not liked by the Eskimo, and that its horns and skin are not utilised. Musk-ox hunting appears to be of most importance towards Eivillik. AMUNDSEN heard from a Netchillik Eskimo, who had been staying at Eivillik, that there the Eskimo irritate the musk oxen by shooting at them with arrows, until they are roused to such fury that they rush in upon the hunters and are then killed by lance-thrusts.

The reindeer meat, like the salmon, is set aside as supplies for winter use. The depositing of these supplies at the lakes indicates that the period between the departure in September and the beginning of October of the reindeer from the country, and the end of the darkest period, is spent just in these places. These months are not spent on the ice or on the sea coast. In 1830 the Eskimo did not come to Ross's winter quarters until well into January, and in 1831, when his ship had changed station, even later. Where the preceding time had been spent Ross had no opportunity of learning personally, but the Eskimo told him that they had been staying partly at Lake Netchillik and partly at another Lake in the series of lakes situated somewhat more to the north, and had been living on reindeer meat and salmon. A few more circumstances may be mentioned in support of the view that the first months of the winter are spent in places where the hunting of reindeer is pursued in the summer, and, perhaps, in the autumn. Ross observed that during spring the natives transported blubber to Lake Netchillik and other lakes to deposit it there. Lastly, the same author mentions winter houses near a lake where his Eskimo guide's kayak lay waiting for summer use. Moreover, there can be no doubt that the "summer houses" Ross himself saw and described near Lake Netchillik were in reality winter houses. He says, regarding them, that there was a group of 30

stone circles with walls about one metre in height. The largest consisted of an oval 4.3 metres long and 3.7 metres broad. These stone walls which remind one of the winter houses on Iglulik can hardly have had anything to do with summer tents. Nothing remains but to regard them as unroofed winter dwellings. The reason why Ross was misled into calling them summer houses was mostly his wish to distinguish them from the snow houses. GILDER mentions similar winter houses from King William Land, where according to him, they are fairly numerous, and he compares them with those similar to them on Iglulik.

As regards the chief group of the Netchillik region, which keeps to the Boothia Isthmus, it is now possible, as regards the main features, to render an account of its settlements and its wanderings at the different seasons, with all due regard to its dependence on natural conditions. One more circumstance, viz., absence of wood, must, however, also be mentioned. The later expeditions did not find wood conspicuously wanting, the FRANKLIN Expedition having supplied wood sufficient for a long period. Ross, on the other hand, among the first Eskimo who visited him in 1830, found harpoons of which the shafts were made of small pieces of wood and bone joined together very cleverly, and with great care. For the rest, European culture had even then reached them in the form of a few English knife-blades. One would almost think that the absence of wood would prevent the making of the Eskimo ice-sledge, with its high runners, but one sees that the want was supplied. At the magnetic pole MC. CLINTOCK met Eskimo who had sledges with runners made of rolled-up, frozen, seal-skin, which were bound together with transverse pieces of bone. On Matty Island the same author found some sledges which had been left behind, and the runners of which were about 1 metre long, about 7 cm. broad, and 10 cm. high. On a lake, Ross saw, in the spring of 1831, sledges which were made of ice. On November 9th, 1903, AMUNDSEN visited an Ugjulit-tribe which lived on King William Land, south-west of Gjõa Harbour; it was living in six huts in a district where autumn hunting was plentiful. On March 17th, 1904, on his way to the magnetic pole, he encountered, in the neighbourhood of Matty Island, Netchillik Eskimo who were living in snow houses on the sea-ice, which was level and glassy between the scattered areas of pack-ice. He met the men belonging to the tribe just as they were pursuing Maupok hunting, each with his dog led in a string. As pointed out by AMUNDSEN, it was just in the same district and at the same season of the year that MC. CLINTOCK met these Eskimo in 1859. Naturally, "Gjõa" had attractions for the Eskimo of both tribes, so that they settled down by preference in the neighbourhood of the ship. But before the ice broke up they were obliged to set out for the reindeer-hunting, and fishing, grounds. But as soon as the ice had formed again in the autumn they came back and lived on meat and fish from their stores. In 1908 these supplies were consumed by the middle of January, and the Eskimo were obliged to resort

to Maupok hunting, but not until well within February could it be pursued with any great chance of success. During spring the newly born young of seals are also hunted, and during June Utok hunting is carried on.

The Netchillik Eskimo spend the summer in the interior where they carry on salmon-fishing and reindeer and musk-ox hunting along the lakes and streams. When the autumn hunting has come to an end, and the reindeer herds have gone southwards, the Eskimo remain in the places where the depots have been laid down, and live on these. The tents are replaced by winter houses, which have stone walls, and are probably covered with ice, snow, and earth. When the darkest mid-winter days are past, or, properly speaking, when the supplies have been consumed, the Eskimo disperse in small groups over the level layer of the winter ice and move from place to place, living in snow houses, and pursuing seal hunting on the ice after the Maupok method. The fact peculiar to the Netchillik district in contradistinction to the previously mentioned territories may be expressed by saying, that the Netchillik district is decidedly Arctic in character, and shut in from the influence of the ocean. The winter ice-covering remains unbroken for more than 9 months in the year, so that during the greater part of the year the district has more the character of a continent than of coast lands. There are no straits like those at Smith Sound and Eivillik, with strong currents keeping the water open during the whole, or greater part of, the year, and permitting the hunting from the ice-edge of walrus or seal. In the Netchillik Sea only the real seals occur, and the Ringed Seal alone is of importance as an animal to be hunted.

Immediately south of Netchillik Sea near the lower narrows of the Back River lives a small tribe which, in 1879, in KLUTSCHAK's time, consisted of 16 families. By older authors this tribe is called Ukusiksillik, and it has sometimes been regarded as a group of the Ugjulik Eskimo, sometimes as a group of the Netchillik Eskimo, which for some reason or other has penetrated southwards. But, as is shown by BOAS, the group has undoubtedly always lived at its present settlements. It must certainly be regarded as being adapted to a kind of inland life, even if it visits the estuary for the sake of hunting seals, and as regards kinship, it must evidently be reckoned together with the whole of the Netchillik group. What is also a proof of this connection is that SCHWATKA found it in possession of wood and articles from the FRANKLIN Expedition, and its members with some knowledge of the unfortunate expedition.

We have very slight knowledge of the Ukusiksillik tribe. BACK was the first to encounter it. He met it near some rapids or whirlpools in the neighbourhood of the mouth of the river named after him. At that period (July 28, 1833) the tribe lived in tents, and was occupied in fishing salmon in the rapids. At the settlement thousands of fish were laid out to dry. The tribe possessed five kayaks, and even at this period it possessed a few knife-blades and lance and arrow-heads of iron. On July 30th, 1855, JAMES ANDERSON met with the Ukusiksilliks near the same rapids. They



lived in three tents of musk-ox skin, and had an abundance of fish and reindeer meat hanging out and drying. On the river five men were hunting reindeer from kayaks. Near Hayes River ( $67\frac{1}{4}^{\circ}$  N. lat.,  $93\frac{1}{3}^{\circ}$  W. long.), in May 1879, SCHWATKA met with some Ukusiksillik families living in snow houses. At that season of the year they were almost famishing; they had no seal blubber at all, and were obliged to dispense with artificial heat. At that time they were living chiefly on the flesh of musk ox, and their boots were made of the skin of this animal. During the summer they pursued reindeer in their kayaks, and carried on fishing at the whirlpools.

### The Eskimo at Coronation Gulf<sup>1</sup>.

While the Eskimo even in Netchillik have been shortly and ethnographically dealt with by Boas, scientific interest has only recently been directed towards the Eskimo who inhabit the islands and coasts at Coronation Gulf. Of all the Eskimo groups there is none to which so little attention has been paid. It is true, that the number of the travellers who have visited Coronation Gulf is not great, but it is nearly as great as the number of those who have visited Netchillik. The first was HEARNE, who in the summer of 1770 arrived at the mouth of Coppermine River. The later and so unhappily famous JOHN FRANKLIN, sailed during July and August 1820 from the mouth of the same river along the south side of Coronation Gulf to Point Turnagain on the north side of Kent Peninsula, and on a later expedition, while his companion RICHARDSON in 1826 sailed from the Mackenzie along the north coast of the mainland to Coronation Gulf, FRANKLIN himself navigated the coast west of Mackenzie as far as Point Return ( $149^{\circ} 37'$  W. long.). In 1838, SIMPSON with his companion DEASE, navigated the south coast of Coronation Gulf, Bathurst Inlet, and Dease Strait to a point on the east coast of Kent Peninsula, and in 1839 he again sailed across Coronation Gulf, and then along the north coast of the mainland and through Simpson Strait as far as the west side of Boothia Isthmus, whereby connection was established with BACK's discoveries from the east. In the summer of 1848, JOHN RICHARDSON repeated his above mentioned journey from the Mackenzie to Coronation Gulf, and in 1849, in accordance with his instructions, JOHN RAE was sent out, who investigated the coast regions at Coronation Gulf, and approached Wollaston Land, where, however, the ice prevented his landing. Finally, RICHARD COLLINSON, in his ship "Enterprise", spent the winter of 1852—1853 in Dease Strait on the south side of Victoria Land. In August 1900, J. MACKINTOSH BELL undertook a journey from Great Bear Lake to Coppermine River, but turned back before he reached its mouth. He found Eskimo occupied in the hunting of reindeer, but did not come into touch with them. Finally we have got highly important enlightenment as regards the population of this region from V. STEFANSSON, who during

<sup>1</sup> COLLINSON, I—III; FRANKLIN; HEARNE; MC. CLURE; RICHARDSON; SIMPSON; STEFANSSON. Cf. STEENSBY, I, pp. 99—105.

1910—11 travelled in the district and lived amongst the Eskimo as one of themselves.

As regards habitation Coronation Gulf constitutes a centre similar to the estuary of Back River with its adjacent straits and skerries. Towards the east it is separated from this Netchillik domain by the long stretch of coast between the Adelaide and Kent Peninsulas, which partly consists of stratified rock, and partly of granite and gneiss and is usually provided with skerries. In August 1839, SIMPSON everywhere found the pack-ice from Victoria Strait lying close up to the outer coasts of the skerries, and right in to land where skerries were wanting. On the other hand, the water within the skerries was free from ice and "clear as crystal". This stretch of coast is, perhaps, not permanently inhabited. The old tent-sites and remains of store-caches which SIMPSON came across were only scattered, and the traces did not begin to become frequent until after he had left Dease Strait and had come to the western end of Simpson Strait. On the south coast of Victoria Land, at Dease Strait, COLLINSON found no signs of habitation. On the other hand, in 1905, on the east coast GODFRED HANSEN came across a group of Eskimo who probably have belonged to the tribe (*Ekollugtogiut*) which STEFANSSON allots to Albert Edward Bay. From STEFANSSON, as previously mentioned, we have got further information regarding the settlement at the indentations on the south-west coast of Wollaston Land and Prince Albert Land, whereby it appears that the settlement is more comprehensive and extends further into Prince of Wales Strait than COLLINSON's observations in 1851—1852 led us to suppose. STEFANSSON's observations also show that the narrow stretch along Dolphin and Union strait and the adjacent mainland coast are not uninhabited, as one had reason to expect from the fact that RICHARDSON twice passed the strait without meeting Eskimo. The region, which with its groups of islands in the strait must also be regarded as good Eskimo territory, is inhabited by several groups of Eskimo, the forefathers of whom must have been hunting in the interior during RICHARDSON's visit. STEFANSSON gives these groups or tribes different names, which are, however, immaterial to us in this connection. The same applies to his names for the groups which, on a map, he places in the area between Dolphin and Union Strait and Dease Strait, although it is the first time that we get further information about these matters.

Coronation Gulf itself constitutes an oblong basin which is connected with the adjacent waters only by narrow straits. The straits as well as the Gulf itself are studded with numerous islets, so that the water is to be understood as a confusion of channels rather than as a large sheet of water. As a line across the mouth of the Coppermine River and the west side of Coronation Gulf more or less forms the western boundary of the large archæan area of North-east America, the coasts of Coronation Gulf essentially consist of steep granite and gneiss cliffs, although the country is rather low, and the islands are real skerries or steep rocky isles built up of granite, trap or

basalt. COLLINSON found the same to be the case with the islands in Dease Strait, whereas the groups of islands which bar Dolphin and Union Strait are built up of limestone. Coronation Gulf, by reason of its position, has extremely weak tidal currents, which come partly from the west and partly from the east, and, as the narrow inlets, with the islands, further act as a sieve to the inflowing currents, the pack-ice cannot succeed in filling up the gulf. The ice, which in the winter forms bridges between the numerous islands of Coronation Gulf, is the smooth winter ice which lies unbroken from October to July, but which always breaks up in the summer. The conditions in the Gulf as seen by FRANKLIN in the summer of 1820 quite accord with the conditions seen by RICHARDSON in 1826, DEASE and SIMPSON in 1836—37, RICHARDSON in 1848, RAE in 1849 and COLLINSON in 1852—53. Its waters were at all times so free of ice, and so open, that it could be navigated in all directions along the coasts and between the islands, even if as is from time to time mentioned, the wind had driven small pieces of pack-ice together in certain places on the coasts. The fresh-water affluxes received by Coronation Gulf can scarcely play any great rôle as regards the open water during the summer. The Coppermine River has too inferior a quantity of water for the purpose. On the other hand, this river is of importance on account of the drift-wood which it carries and distributes along the coasts of the mainland and the islands. FRANKLIN, to be sure, says, that it does not carry drift-wood, but this can only refer to heavy timber, which is carried to the Arctic Ocean only by the Mackenzie. It seems, in reality, as if several rivers contribute their share of drift-wood. Thus, SIMPSON found that even the small Ellice River, which empties itself into Dease Strait, tore away the low willows along its banks and carried them out to sea. All large pieces in Coronation Gulf can without doubt be attributed to the Mackenzie River. As the fuel of the expeditions consisted of drift-wood, its occurrence and size was noted with particular care, and from these notes its decrease towards the east as far as Cape Barrow can be followed up. SIMPSON broke into raptures when, on his way back from Dease Strait, having passed this promontory, he again found the beach strewn with drift-wood, with which he had had almost entirely to dispense in Bathurst Inlet and on the coast of Kent Peninsula. STEFANSSON was of opinion that the greatest quantity of drift-wood was found on the coasts which faced west, or which were most exposed to the prevalent north-westerly winds. Thus there was more drift-wood on the south side of Prince Albert Sound than on the north side. On the coast of the mainland drift-wood only began to become abundant at about 120° W. long., (or more exactly, to the west of Crocker River), after which it occurred as far as the west of the Mackenzie, when it began to decrease. STEFANSSON says of the drift-wood in the region of Coronation Gulf that it is sufficient to provide the Eskimo with wood for implements, but that it would disappear in the course of a short time if they should begin to use it for fuel. For the rest, according to the same author, there are at

any rate some Eskimo in the district who reach so far south on their summer journeys to the mainland that they can bring wood back with them from the forest.

From the notes now before us we are able to form a fairly correct conception of the aquatic mammals in Coronation Gulf. Whales are not found, or, at any rate, only as rare and stray visitors. The only person who mentions a whale is SIMPSON, who found the skeleton of one on the coast of the mainland at  $103^{\circ} 37'$  W. long. Towards the east the pack-ice of Mc. Clintock Channel probably acts as a barrier, and according to Simpson's observations the whales coming from the west did not reach so far east. FRANKLIN remarks, in addition, that by conversing with the Eskimo he had ascertained that neither whales nor walruses were found, but, on the other hand, numerous seals. STEFANSSON remarks that here the Eskimo only know the "Bowhead" whales from a few carcasses driven ashore, partly because here they are very rare, and partly because the Eskimo are always in the interior during July and August, when the whales possibly may stray in. The same is applicable also where the small whales, for example the White Whales, are concerned.

When, in 1770, the first white man, HEARNE, looked across Coronation Gulf, a number of seals were lying sunning themselves on the ice which was still unbroken around the islands. All later travellers mention the great number of the seals, but only seldom did they succeed in catching any of them as spoil, partly because they were very vigilant, and partly because they sank to the bottom when shot, a fact with which their leanness during summer has some connection. It was the "small seals" which occurred in such quantities, or, in other words, the Ringed Seal, so well known from Netchillik and the more eastern territories. Moreover, according to the evidence of several travellers (RAE, STEFANSSON and others) the Bearded Seal occurs in considerable quantities, but it is hunted to a relatively slight extent, and almost always by employing a kind of Maupok method, when two men co-operate.

Reindeer are found in large numbers round Coronation Gulf. In the spring they migrate from the south and cross the ice to the small islands where they bring forth their young. On October 9, 1852, COLLINSON saw the reindeer gathering in herds along the north side of Dease Strait waiting for the ice to form a bridge over to the mainland, and next spring, after April 6, he again saw them wandering across the strait northwards. At the end of April and the beginning of May 1911 STEFANSSON saw the beaten paths of herds of reindeer going north, both in Coronation Gulf and Dolphin and Union Strait. In the autumn, together with the herds came a flock of wolves as well as a party of Eskimo; and in Victoria Land COLLINSON saw a cleft which, by an arrangement of stones and turf, had been made to serve as a natural hunting fence. On the islands in the strait, he also saw an arrangement of stones which was used by the natives when driving the herds together. FRANKLIN and SIMPSON mention similar

fences from the valleys in the districts at the south side of Coronation Gulf, where they were made of piled-up turf.

The first English travellers did not take any great interest in the Eskimo population. At the mouth of the Coppermine River and in Dease Strait, however, they came in closer contact with them. There they got the impression that linguistically they were, if anything, approximate to the East Eskimo, and that they differ from the West Eskimo in cultural respects, also, by not wearing lip ornaments. A more exact definition of the different tribes in the district was, however, only commenced by STEFANSSON. But this is less essential in this connection. Here, the main point is that Coronation Gulf with its smooth covering of winter ice from October till the end of June makes communication between all islands and coasts reciprocally easy, whereby this becomes an absolutely habitable domain, which is bounded on all sides by land or ice-packed seas. How many Eskimo this domain with its smaller neighbouring territories on the east and west coast of Victoria Island harbours is not known with any certainty; but, according to the Eskimo conditions, the number can hardly be insignificant. SIMPSON estimates that those who, during the summer, visit the coast between the west end of Coronation Gulf and Cape Barrow number 3—400, and COLLINSON was visited by 2—300 at his winter quarters in Dease Strait.

As to the hunting implements of these Eskimo, HEARNE says that they are like those which CRANZ describes from Greenland, and he saw, as did later SIMPSON, COLLINSON and MC. CLURE, implements which were made of copper. The implements which these travellers brought home are now to be found in the British Museum in London, and the copper material plays rather a prominent rôle, especially in the arrow points. Furthermore, some fish-hooks, woman's knives, axes, ice-chisels, as also numerous spear-heads are of copper. On the other hand, there seem to be no harpoon heads of copper and there is not a single article of copper from the Mackenzie or Netchillik Eskimo from which we may be justified in concluding that the copper, which must have come from the Bloody Fall pits at Coppermine River, neither at all nor even sparingly got beyond the Coronation Gulf territory.

Umiaks are entirely absent with these Eskimo. On the other hand, they have kayaks, which here are said to be smaller than those at Bering Strait and Hudson Bay.

All the groups which SIMPSON met on the south side of Coronation Gulf were found to spend the winter out in the Gulf on the sea ice, or on the islands where there was easy access to the seal hunting, which, in the winter and spring, was their principal means of subsistence. Until well into the winter they live on supplies of reindeer meat and fish, which they have put by in the course of the summer. If for some reason or other the seal hunting fails in the spring, great distress supervenes, which RAE found to be the case in 1849. In the spring they generally kill so many seals that



they can store away blubber for use in the autumn. Shortly before the ice breaks up they set out in sledges for the continent, where, in reindeer-skin tents, they spend July and the following months in salmon fishing in Coppermine River and other streams, and also in the hunting of reindeer as these, by degrees, become well nourished on the summer vegetation. When the sea is frozen over once more, and the reindeer have started for the south, the Eskimo return in the course of the winter to the Gulf, where they live in snow houses. Probably this move does not take place until the supplies are almost consumed. That HEARNE, on the coast of the continent, came across a couple of indubitable winter houses is in accordance with this. They were situated on the southern side of a hill, half under ground, and "above were closely set with poles, which met in a conical shape like the summer tents." Round them lay quantities of bones, and also caldrons of "whitish grey stone."

At Dease Strait COLLINSON found that the Eskimo migrations were dependent on those of the reindeer backwards and forwards across the strait. From May till October they lived on the south coast of Victoria Land, where, to a great extent, they occupied their time in fishing in the fresh waters. In the autumn when the reindeer gathered on the coast they hunted them in fences, and then followed them across the islands to the mainland. In a short report to the Royal Geographical Society in London COLLINSON expresses himself thus about the Eskimo (II, p. 200): "They belong to the Central tribe of Esquimaux, wearing the same costume and speaking a similar dialect to the Igloodik and Boothia Isthmus people; and unlike the Greenland and Behring Str. tribes, who perform almost all their migrations by sea, these people travel over the land and ice with sleighs. Their journey to Victoria Land is performed previous to the breaking up of the ice in the summer, and having no oomiaks, and but one or two kayaks, their communication with the continent is cut off until the straits are bridged over by the frost; they then assemble between Cape Colborne and the Finlayson Islands, which is the great crossing-place for the reindeer, and, after they have obtained as many as possible, pick up their caches of fish and venison, and return to the continent for the winter."

It must be said about this wintering on the continent, however, that COLLINSON had no opportunity to substantiate this point. In his description of his journey he acknowledges this himself, but thinks that he is able to conclude that they spent the winter not far distant from his own winter quarters on the north side of Dease Strait, without it being possible for him, however, to find their abiding place. The explanation simply is that they did not enter the mainland in order to remain there, as COLLINSON assumed, but that they at once, with the commencement of the winter, settled at the coasts of the gulf or on its islands, whence they had easy access to the ice for the purpose of seal hunting and whither they could easily transport their supplies of dried meat and fish from the continent.

STEFANSSON'S description shows still more distinctly the aspect of the

annual economic cycle of these Eskimo. In the winter they live almost exclusively on seals, which they hunt by employing the Maupok method. They use dogs to find the breathing holes. STEFANSSON explains in a most interesting manner why the Eskimo in these districts live on the ice and constantly have to move their settlements of snow houses while extending the range for obtaining their winter means of support. "In a month or so the hunter will have killed all the seals within the radius of about five miles; they must then move camp about ten miles, so that a five mile circle around their next camp shall be tangent to the five mile circle around their last one." For a hunter who employs the Maupok method, a five mile radius is a suitable range. The Utok method plays only a subordinate rôle, and hunting from the edge of the ice and cracks in the ice, if practised at all, does not seem to be of any importance whatever. Even before the ice breaks up the Eskimo withdraw to the interior, where they carry on salmon fishing and reindeer hunting. Here the winter sledge-dogs are used as pack dogs while the men themselves carry the kayaks, which are used as ferries for crossing rivers, and are also employed in the reindeer hunting. The summer proper they spend chiefly at the salmon fishing stations, while the autumn is the time for the great reindeer hunt. During the great salmon fishing and reindeer hunts, and during autumn and early winter while the supplies last, is the time when large groups collect or when the tribes meet, whereas the time of the winter ice-hunting is a time of dispersal.

### The Mackenzie Eskimo<sup>1</sup>.

The domain of the West Eskimo which extends along the north and west coasts and partly along the south coast of Alaska begins to the west of the unbroken stretch of coast between Coronation Gulf and Darnley Bay. Such original conditions as we find with most of the Central Eskimo and with some of the Greenland groups are not met with here, because the West Eskimo have been subjected to indiscriminate extortion by Russian and American whale hunters. The following pages will be specially concerned in re-establishing the conditions as they originally existed, and as the first European and American travellers found them. Apart from the Eskimo at the mouth of the Mackenzie River and the few Asiatic Eskimo, all West Eskimo are now under the rule of the United States of America, as in 1867 the Russians sold their American possessions. Even before this period American whale hunters had visited Alaskan waters. In 1848 the first American whale hunter passed through Bering Strait, and was soon followed by many others. Further and further did the whale hunters penetrate towards the north and north-east. In 1889 they reached Herschel Island, and there found the good harbour which has since been the central winter quarters of the fleet of whalers which yearly visits the waters outside the mouth of the Mackenzie as far south as Banks Land. Owing to the influence of the

<sup>1</sup> COLLINSON; FRANKLIN; HOOPER; MC. CLURE; MACKENZIE; PETITOT; RICHARDSON; SIMPSON; STEFANSSON; STOCKTON. Cf. STEENSBY, I, pp. 106—111.

whale hunters, the Eskimo in the Mackenzie district are greatly degenerated, and their original form of culture is no longer met with in its pristine form. This, however, is the only form which is of interest here. Even in its original condition of culture the Mackenzie district was visited more often than was Coronation Gulf; but as regards ethnography it has not been thoroughly dealt with. The first to visit this coast was ALEXANDER MACKENZIE, who, on July 12, 1789, reached the mouth of the river which now bears his name. Of later travellers may be mentioned FRANKLIN and J. RICHARDSON 1826, the latter again in 1848, SIMPSON 1837, W. H. HOOPER 1849, MC CLURE 1850, COLLINSON 1851 and 1853, PETITOT 1865 and C. H. STOCKTON 1889. Amongst travellers of recent date must especially be mentioned V. STEFANSSON, who stayed there during 1906—1907; and, also, several times during the years 1908—1912. The inhabitants of the coast have for long — even before 1889 — been in contact with Europeans, in that they yearly visited Fort Macpherson, as also Fort Anderson, which was afterwards demolished. Here, as a name common to them all, I am using the term “Mackenzie Eskimo,” as the names “Great Eskimo” and “Tschiglit” Eskimo, which PETITOT uses, are not satisfactory.

The boundaries of the district are not sharply defined. Towards the east it is the above-mentioned stretch of coast east of Darnley Bay which forms the boundary between the two large groups of West Eskimo and East Eskimo, the distinction between which, however, seems to be more geographical than ethnographical in character. According to STEFANSSON's observations they are not geographically more approximate to each other than was formerly supposed, and, at any rate in earlier days have enjoyed a lively intercourse. Today, however, the whole stretch of coast from Cape Bathurst to Cape Bexley is uninhabited. Towards the west there is the long uninhabited north coast of Alaska as far as Point Barrow. A feature which at once attracts one's attention as regards this stretch of coast is that the original winter settlements generally were situated on points or projections. There has been some doubt as to whether the most easterly winter settlement was situated on Cape Parry or on the somewhat more easterly Cape Lyon. According to STEFANSSON, it seems as though the habitation of this group should be set even further east than Crocker River. West of the Mackenzie, the most westerly settlement seems to have been situated between Herschel Island and Manning Point. FRANKLIN and W. H. HOOPER saw the most westerly winter houses at about  $141^{\circ}30'$  W. long.; but when MURDOCH, during 1881—1883, visited Point Barrow, the most westerly settlement was situated on Herschel Island, where there was said to be one of considerable size. Within the domain itself, also, it is impossible to fix the exact situation of the settlements, as the visits have been made too rarely and at too great intervals. It seems that one of the largest settlements was situated on Point Atkinson ( $131^{\circ}$  W. long.), where ATKINSON found 17 winter houses besides a meeting house (kashim).

As regards the character of the coast there is a great contrast between this territory and Coronation Gulf. Because, while we there had a range of skerries with a rocky coast, at the mouth of the Mackenzie we find only shoals



with a flat coast, which, with the exception of limestone promontories such as Cape Bathurst and Cape Dalhousie, consist of alluvial formations. The factor which, from a geographical point of view, characterizes this territory is the disembogement of that gigantic stream the Mackenzie River. It is not only the deposit of the river, which has built up the coast and the considerable delta which in the whole of its extent southwards is visited by the Eskimo during the summer, but it is also the warm water supplied by the river which makes possible the habitation of the sea-coast. And the quantity of drift-wood which the river carries by reason of the huge strength of its current and its continuous flow through the woodlands, inasmuch as the limit of the woodlands is not reached until the beginning of its delta, enables the Eskimo here, when building their winter houses, to have as abundant an allowance of wood as have the inhabitants of the woodlands. As long as the expeditions were on this stretch of coast they were not inconvenienced by lack of fuel.

The most important effect of the river water is that the pack-ice is kept at a greater distance from land than one would otherwise expect to find it, and that here during the summer a large open basin is formed, which towards the west through a narrow channel along the coast of Alaska is connected with the open sea round Bering Strait. FRANKLIN on July 9, 1826, found open water as far as 69° N.lat., and ascertained from the Eskimo that with a land breeze the ice would go still further out to sea, and remain there "until the stars again showed themselves."

According to FRANKLIN's and RICHARDSON's observations and information from the Eskimo, the White Whale is the whale which first appears. The Black Whales are not seen until the end of July, when the ocean has become as open as it possibly can. RICHARDSON learnt from the Eskimo, that besides White Whale as also large and small seals (Bearded Seal and Ringed Seal) Narwhals were found, and also a kind of Black Whale. Walruses were not known, as a rule they do not go east of Point Barrow. By the Black Whale species must be understood the Bowhead which every summer passes Point Barrow on its way to the sea off the Mackenzie, whence it is then followed by the whale hunters. PETITÔT distinguishes between "la baleine" and "le marsouin." The first mentioned is hunted from a umiak whereas the last mentioned is hunted from kayaks. About whale hunting from umiak RICHARDSON reports that it is carried on jointly. There is every reason then to believe that the hunting of large whales is carried on at the Mackenzie under similar forms as west of Point Barrow, whence more detailed accounts are to hand.

By PETITÔT's "porpoise" must be understood the White Whale, which animal plays a prominent rôle to the Mackenzie Eskimo. MACKENZIE saw a great number of White Whales in the mouth of the river, and from his guide got the information that this was the animal on which the Eskimo principally lived. By this it is not by any means asserted that smaller dolphin-species should be entirely absent; but probably it is as in Greenland, where these animals are difficult to hunt, and without any practical importance to mankind. On the other hand, the White Whale gives a splendid bag; it seems as if, which PETROFF likewise reports from

Alaska and Yukon, that it preferably resorts in schools during the summer to the shallow water at the mouths of the rivers, where it is hunted by a series of kayakers, who try to imprison the school. Towards the east the whales do not go much beyond the Mackenzie territory. According to RICHARDSON's and STEFANSSON's observations they diminish east of Cape Parry, and in great numbers hardly go east of Crocker River. The whale hunting which is carried on during some weeks about the month of August is different from the hunting of most of the hitherto mentioned Eskimo groups, inasmuch as these essentially have procured blubber by seal hunting on the ice during winter and summer. The period partly coincides with the period of reindeer hunting in the interior.

Seal hunting is, however, by no means neglected in the Mackenzie territory, and is here, as in other Arctic districts hunting on the ice. Likewise here it is the Ringed Seal, of which STEFANSSON<sup>1</sup> reports that nowhere else did he see them as numerous as in Darnley Bay. In the winter the Maupok method is used, and in spring are hunted the seals which have crept up on the ice (Utok). The last mentioned modes of hunting are, however, hampered by the peculiar geographical conditions of the stretch of coast, in that the shallow water at the coast necessitates the seals resorting rather far out to sea, and out there the pack-ice lies, and proves a hindrance, so it is only on the smooth ice between the stranded icebergs and ice blocks that hunting can be carried on. According to RICHARDSON the Mackenzie Eskimo in the spring disperse over the ice to carry on seal hunting, and during this time they live in snow houses.

The summer is not solely devoted to whale hunting. It is also at this season that the Eskimo have to fish for salmon in the rivers, and in the autumn they must hunt the large herds of reindeer which visit the coasts and the few near lying islands such as Herschel Island, which especially seems to be a favourite summer and autumn place of residence for the Western Mackenzie Eskimo. Of hunting methods a few were observed. FRANKLIN on August 4, 1826, some kilometres to the west of Point Manning, was present at a battue where the Eskimo tried to surround a herd of reindeer in order to drive them out into a lake, where the animals were killed with spears from kayaks. Finally, along the coast, numerous hunting fences were found which generally were made of piled-up turf. SIMPSON and FRANKLIN mention several which generally led out into a lake, so also in this case the usual thing seems to be the killing of the animals from the kayak. Fishing plays an important rôle, which is evident from the supplies of salmon which SIMPSON and PETITÔT mention, as also from the fact that here are used fishing nets of bast, sinews or whalebone. The East Eskimo only fish with the salmon spear and the little hand net. This employment of nets for which even bast is used as a material probably points in the direction of the wood and lake districts of the interior of America. STEFANSSON asserts that the net was imported about 125 years ago.

The sledge is the usual Eskimo form of ice-sledge, with narrow runners, which is extensively used on the smooth ice, which, during a great part of the

<sup>1</sup> I, p. 321. — II, p. 451.

year, lies like a border between the coast and the pack-ice, covering the shallow water. It is this smooth coast-ice which forms a passable road along the north coast of Alaska. Every spring this sledge road is, or rather was, visited by the West Eskimo who brought European goods to the district round Point Manning, where they met the Mackenzie Eskimo. The description which PETITÔT gives of these sledges and this mode of travelling is interesting, because this author, who lived as a missionary amongst the Hare Indians, was in advance prejudiced against the enemies of the Indians, the heathen Eskimo, for which reason he is inclined to see everything from the darkest point of view where they are concerned. The sledges he describes as heavy and clumsy contrivances "the smallest fault of which is to penetrate deeply into the snow" — not thinking of the point that they are not meant for conveyance on the snow but on the ice. Every second or third hour, he says, the runners have to be brushed over with water and snow to be kept slippery, and for this purpose the ice has to be cut through, which is a tedious task. As a rule the sledge is put to with 5—6 dogs in a transverse row, not in a line as with the Indians. The Eskimo walks behind the sledge, leaning on a stick "geignant," and constantly stopping; he does not demand "the speed of Pegasus" from his dogs. At the end he always throws himself on the sledge even if it is heavily loaded. After this PETITÔT recounts all the articles of dress, chattels and provisions which the Eskimo carries with him, and he says that "these Sybarites of the Arctic Sea need a comfort which the North Indians easily dispense with."

RICHARDSON, from Point Atkinson has already given a summary of the various occupations of the Eskimo at the different seasons. About the inhabitants here he says that they hunt reindeer and water-fowl on the coast plain during the summer, that they carry on whale hunting during one month or six weeks in the autumn, live with their families in settlements during the dark winter months, and in the spring go seawards out on the ice to catch seals. PETITÔT says that they fish in the delta from the middle of June till the middle of July. The fish (White Salmon and "L'inconnu") mixed with blubber is dried or preserved in bags of skin. Together with the fishing, reindeer are hunted and the latter hunting is continued until August, when hunting of whales at sea begins. The annual economic cycle is somewhat disturbed by the circumstance that the periods for hunting reindeer and White Whale partly coincide, which causes a division of the population, in that some go to the interior and others to the sea coast. Apart from this, however, the Mackenzie Eskimo are, during the summer, pronounced inhabitants of the interior, like the last mentioned groups. The Eskimo use tents until October, when they move into their winter dwellings. Finally, in the spring, the snow house is used, which PETITÔT was the first to observe and describe from these districts. As regards the winter-house, which will be mentioned later, I will only point out here that this house — several of which are built together in permanent, village-like groups — so to say give the Eskimo a more assured culture when compared with their southern neighbours. It is used during the autumn and a great part of the winter, which accords with two facts, viz., that a specially large supply of fish and whale blubber can

be stored away, and that the sea ice, in a lesser degree, is adaptable for Maupok hunting. PETITÔT who, from predilection, describes the Eskimo as fat, sedentary, good for nothing fellows in contrast to the lean, hardened Indian, says that, compared with what he has otherwise seen of the dwellings of "savages," the Eskimo winter house is the best which can be procured in 69° N. lat. In spite of his ill-will, perhaps no other author gives a better idea than does PETITÔT of the comparative richness and height of the Eskimo hunting culture.

Through travellers meeting the Mackenzie Eskimo one gets the impression that they originally were a comparatively numerous tribe, and one gets the same impression from their numerous visits to the trading stations. Thus PETITÔT found that Fort Macpherson was on June 11, 1877, visited by about 500 Eskimo, who had arrived in 24 umiaks, and only by 150—200 Kutchin Indians. PETITÔT estimated the total number at 2000. On the basis of RICHARDSON's statement, that in 1848 he saw about 200 kayak men coming out from a settlement where they had been carrying on White Whale hunting, STEFANSSON assumes that the number must then have been 2000 at the very least. Meanwhile, under the influence of civilization through whale hunting and trade, this number has been reduced to such an extent that at the census which was taken by the Canadian Mounted Police in 1911, only 40 thorough-bred descendants of the old Mackenzie Eskimo were found, to which could be added only 100 who were immigrants from other tribes or half-breeds.

### The Point Barrow Eskimo<sup>1</sup>.

After ELSON in 1826 had, on a boating trip along the coast from Icy Cape northwards, discovered Point Barrow this was for a long time considered un-circumnavigable on account of the ice, and when in 1850 it was passed by the "Investigator" the crew drew breath more freely, believing that they were already on their way home to England through the North-west Passage. Since that time numerous ships have passed Point Barrow, and the north-western and northern coasts of Alaska are now well-known. These, as regards their structure and the conditions of the ice, offer as far south as the southern coast of Kotzebue Sound quite homogeneous conditions for Eskimo settlements, for which reason these stretches of coast are described collectively, taking the group at Point Barrow as a type.

The country, along the whole of its coast, is a rather low tundra with numerous pools and small streams, while large water-courses and delta-formations are totally wanting. The coast itself, with the exception of such parts as Cape Lisburne and its environments, is low and sandy and has lagoons usually accompanied by bars of sand, which run parallel with the coast, and at some distance from it, and are here and there elevated into low islands. The highly sandy character of the coast is also evidenced by many of its heads being sandy promontories. This is the case, for instance, with Point Barrow, Point Belcher,

<sup>1</sup> Authors specially consulted are: MURDOCH, I and then ALLDRICH; BEECHEY; NELSON; PETROFF; RAY; STEFANSSON. Cf. STEENSBY, I, pp. 112—116.

Point Hope and with the peninsulas at the entrance to Hotham Inlet and Eschscholtz Bay, and this circumstance is of importance, as the Eskimo settlements are located on such sandy promontories as afford them easy access to the sea and ice.

Like the coast of Mackenzie and the north coast of Alaska the stretch of coast we are here considering is open to the pack-ice, which, during the winter is pressed in upon the land, while, for a short period during summer, it retires and gives place to a wide extent of open sea, except when the westerly gale may occasionally drive the pack-ice onto the land. The bars of sand, however, play an important part as regards the pack-ice, the larger cakes of ice grounding on them and forming a barrier within which the smooth winter ice is not broken, but is permitted to form undisturbed. MURDOCH records from Point Barrow that the sea is frozen over, or filled with pack-ice, from the middle of October to the end of July. There the bar is situated about one kilometre from the coast, and the fixed barrier of ice may during the winter attain a breadth of several kilometres before the loose, moving pack-ice is reached. The barrier does not consist, however, of a compact conglomerate of ice-blocks, but is frequently interrupted by level fields of winter ice on which the Eskimo carry on seal hunting as they do on the ice within the bar. In some years, however, under the pressure of violent autumn gales, it may happen that the ice pushes across the bar, and the masses of pack-ice are pressed closely together, so that the smooth winter ice disappears. When this happens, as was the case for instance in the winter of 1882—1883, when a part of the winter ice was crushed, seal hunting is prevented and a period of want ensues.

The streams hardly yield any drift-wood and according to RAY's observations the larger pieces of wood which occur all come from the Mackenzie. The various species of wood the Yukon distributes along the coast of Norton Sound were not to be found north of Bering Strait, and only a very few, old, damaged pieces of drift-wood were of Siberian origin. The theory of its coming from the Mackenzie is also verified by the fact that drift-wood occurs in greatest quantities east of Point Barrow, and decreases in abundance west of this point. The Eskimo collect drift-wood very carefully; but sometimes it takes 3—5 years to collect enough for a boat or a winter house.

In contradistinction to the Mackenzie territory, here the interior of the country is not occupied by Indian tribes, such not being met with until one is south and east of the districts drained by the rivers Colville and Noatak. On the other hand, an Eskimo inland-population has developed here which, according to PETROFF, in 1880 consisted of upwards of one-third of the Eskimo population of the district. STEFANSSON records that during summer they hunt caribou, and with hooks and nets carry on fishing in the rivers. But, during winter, probably the majority of them make sledge journeys to the coast to hunt seals, because the settlements are always situated along streams, which during the greater part of the year form good sledge roads to the coast, being frozen over as early as the first week in September. These sledge roads are not only used by the inland Eskimo, but also by the coast inhabitants on their journeys to the interior

for the purpose of hunting or fishing. The sledge road along the Noatak and Colville rivers was used right down to our own days by the Kotzebue people on their trading journeys to the Mackenzie people.

The animal world and the original hunting conditions are described from Point Barrow by MURDOCH and RAY, who were staying there during the years 1881—1883 as the U. S. A.'s members of the International Polar Exploration. Four species of seal occur, of which the Ribbon Seal (*Phoca fasciata*), the Harbour Seal (*P. vitulina*), and especially the Bearded Seal (*Phoca barbata*), the skin of which is highly valued for making boat covers, are rather few in number, while the Ringed Seal (*Phoca foetida*), on the other hand, occurs in abundance and at all seasons of the year. During the spring and summer it is found between floating cakes of ice, and is then shot from the umiak with a rifle, but originally it was pursued in a kayak, and a small harpoon was used, which was thrown with the throwing board, the shaft of which, by placing itself perpendicularly in the water during the flight of the seal, replaced the float. During the winter Maupok hunting was practised, and during the spring seals were captured by the Utok method, or hunted at the cracks in the ice; in addition, net-hunting under the ice was largely carried on. In the darkest period the net is set parallel to a crack in the ice, along which it hangs down like a curtain. A man must always be present to watch the net, and to entice the seals by scratching on the ice, or by whistling gently. MURDOCH mentions a hunting party which captured upwards of 100 seals during one single night, and he knew of a man catching 30 seals during one night. When daylight begins to come back the net is set horizontally under the breathing holes to catch the seal when it dips down perpendicularly into the water, after having blown. These methods of net hunting, which possibly had corresponding methods among some East-Eskimo groups, such as the northern West-Greenlanders and the Angmagsaliks, and probably are employed also at the Mackenzie, must, according to NELSON, occur southernmost in Kotzebue Sound, but are not met with south of Bering Strait, where, however, the net is used in open water.

These methods of hunting chiefly apply to the Ringed Seal. During the summer the Bearded Seal is captured from the umiak with a harpoon of the same size as that used for walrus hunting. The walrus are rather plentiful in the season of open water, and are pursued in umiaks, especially in September, when the sea begins to be filled with floating cakes of ice. The walrus hunting is or was, however, of slight importance in comparison with the hunting of the Bow-head Whale, which, on account of its size, could yield an enormous quantity of meat, blubber, and whalebone. Previously, before the American whale-hunting had reduced the number of the animals, as many as 20 were killed yearly at Point Barrow; but in the two years 1882 and 1883, only two were killed in all. In no other place in the whole of the Eskimo region has whale hunting played so important a rôle for the Eskimo as along this stretch of coast from Point Barrow to Kotzebue Sound, and in no other place has hunting from umiaks been so well organized and so well pursued. When, in the middle of April, the ice began to form open channels, the whales arrived and continued their journey

northwards until the end of June; after that time there were no whales in the sea until the end of August, when they again began to return, and go southwards from their summer sojourn at the Mackenzie. At the beginning of the whaling season, which was divided into two parts, according to the passing of the whales to and from eastern waters, every boat-owner tried to secure for himself a crew, which kept together as an organized body as long as the hunt lasted. Usually it consisted of eight paddlers, besides the harpooner, who occupied the bow, and the captain, — as a rule the owner of the boat — who sat in the stern and steered. Men were preferred as paddlers, and only in cases of necessity were women used for this purpose. When a whale was sighted they paddled up as close as possible to it and tried to thrust as many harpoons as possible into it in order to exhaust it, so that they might ultimately kill it with lances and tow it to the ice-edge or the shore. All those who flensed it were entitled to the meat and the blubber; but the whalebone was divided among the crews who partook in the chase.

The White Whale, which is of such importance at the Mackenzie and in Norton Sound at the mouth of the Yukon, is only casually hunted at Point Barrow, although, during the summer, large shoals are seen to pass along the coast on their way to and from the Mackenzie.

Reindeer are found in great numbers on the tundra. In the summer the herds come down to the coast, and during the winter some of them remain in the interior, more hilly regions, where the Inland Eskimo hunt them on snow shoes, and by the use of snow pitfalls. During the summer the reindeer are hunted in streams and lakes from kayaks, and in fenced-in enclosures. Thus, MURDOCH observed between a lagoon and the beach a range of stakes which was set to guide the reindeer herds into the water.

The musk ox is no longer found, but according to STEFANSSON it was not exterminated until towards 1860. The Eskimo at Point Barrow mentioned their forefathers having hunted the musk ox in the interior, and their bones were found in abundance in the kitchen middens. That it is the Eskimo who have exterminated the musk ox must be regarded as a certainty.

Fishing in the sea is carried on especially by women, children and old men; but salmon fishing in rivers is more important. The chief implements used in fishing are the salmon spear, hooks, and fishing nets. With the exception of the darkest period of the winter they are used all the year round in open water and at openings made in the ice.

The most characteristic features of the economic culture at the north-western coast of Alaska are (1) the Bowhead Whale hunting, which, in contradistinction to the Mackenzie-Eskimo's single season of hunting in August, is divided into two seasons, corresponding to the wandering of the whales to and from the Mackenzie, and (2) the large use made of whalebone nets for sealing, which nets are dependent on the whale hunting. Lastly, the umiak is the principal form of boat, and it has not degenerated into a contrivance to be used by women, while the kayak plays only a slight rôle on the sea. MURDOCH is of opinion that, with the exception of the Smith Sound Eskimo who originally had no know-

ledge of it, it was only the Siberian Eskimo who made slighter use of this contrivance than did the Point Barrow Eskimo. But here MURDOCH is thinking exclusively of its use on the sea. That kayaks must be of some importance to these Eskimo is evident from his further remark that, so to speak, every grown-up man owns and can handle a kayak. According to MURDOCH it is but slightly employed on the sea, and then only in the neighbourhood of the settlement. But it is of greater importance inland, at the hunting of the reindeer, which are pursued for preference while swimming in a river or in a lake.

Consequently, long annual journeys are not made by the Coast Eskimo, as they can procure their livelihood all the year round in the neighbourhood of the settlement. In the summer the tents are frequently pitched in the same place as the winter settlement occupies. The latter consists, as a rule, of a number of dome-shaped earth-houses grouped around one or two larger houses used as Kashims. As, in the winter and spring, they do not move out on the ice during the seal hunt, they continue to live in the winter houses, and snow houses are built only exceptionally, when the necessities of travelling demand them. It appears that they do not know, or have forgotten, how to finish off the arch at the top, as they lay poles across the opening and cover it with a roof of skins.

### The Asiatic Eskimo<sup>1</sup>.

As regards the form, height and structure of the coast the north-east end of the Asiatic continent corresponds fairly exactly with the north-west coast of Alaska. On the other hand the hydrographic conditions on the western and eastern side of Bering Strait are very different, because the current at the American coast is northerly, while at the Asiatic coast it is southerly. In connection herewith the last mentioned is to a greater extent blocked by drift-ice and ice-masses frozen together than is the Alaskan side, and furthermore the climate to the west is the most Arctic. South of East Cape, where the coast line withdraws in a south-westerly direction, it seems as if a surface of winter ice forms along the land and in the indentations. On an American map<sup>2</sup> of the edge of the shore ice in Bering Strait no coast ice is indicated on the American side, whereas at the above mentioned place on the Asiatic side large ice-surfaces occur, along the outer edge of which the pack-ice is stated to pass. South of Indian Point, or along the real Pacific Coast of Asia, smooth ice does not generally form, on account, amongst other things, of the terrific winter gales and the tidal currents.

From an ethnographical point of view the district is of much interest. The fauna offers good conditions for the Eskimo culture, inasmuch as there are both seals and whales in considerable quantities. Of the kinds of seal are first and foremost the Ringed Seal, and the Bearded Seal, and there are also

<sup>1</sup> BOGORAZ and further ALLDRICH; DALL; GERLAND; HOOPER; LÜTKE; JOCHELSON; NORDENSKJÖLD; NORDQUIST; WRANGELL. Cf. STEENSBY I, pp. 117—121.

<sup>2</sup> SMITHSONIAN MISCELLANEOUS, Vol. 25. Washington, 1883.



a couple of new forms the Okhotsk Seal (*Phoca ochotensis*) and the Ribbon Seal (*Histiophoca fasciata*), of which the latter is only found in the Bering Sea. At the coast of the Arctic Ocean and Bering Strait we furthermore find the walrus, which, during autumn and spring, undertakes migrations through Bering Strait to and from Holy Cross Bay, in which district the animal winters.

As the place where the two continents approach each other, attention has frequently been directed to the Chukche Peninsula when theories of the populating of America from Asia have been in question. Here, however, no regard will be paid to this.

Yet in the history of the problem of the origin of the Eskimo Culture, the Chukche Peninsula has played a rôle, because the mere occurrence of Eskimo here at sometime was sufficient reason for many putting their faith in the Asiatic origin of the whole people. Nowadays there cannot in reality be any doubt that the Asiatic Eskimo have immigrated from America at a relatively late date; but for the older theories of migration their presence was one of the points of support.

Finally the linguistic and cultural conditions of the Chukche Peninsula are of such a peculiar and intricate character that with most travellers, especially the older ones, they have occasioned errors, and only GERLAND's acuteness cleared up the confusion. More thorough information on the basis of observations from sojourns lasting through years we have finally obtained through W. BOGORAZ, whose large work "The Chukchees", as a part of the works from The Jesup North Pacific Expedition, is edited by F. BOAS.

Linguistically the inhabitants of the Peninsula are divided into two separate peoples, Eskimo and Chukches; but as regards culture they fall into three divisions, because the latter are divided into reindeer nomads and coast inhabitants, of which the latter live on seal hunting and fishing, like the Eskimo. When, thus, the coasts are inhabited partly by Eskimo and partly by Coast Chukches, and when, in addition, they are visited every summer until the end of September by reindeer nomads with their herds, one can understand how one traveller on a visit to the coast might come across Eskimo, while another almost in the same place might knock up against a Chukche-speaking group, and from that have occasion to distribute the belief that the Eskimo in Asia had succumbed to the Chukches.

On the other hand, other travellers, who have not laid great stress on the great linguistic and the lesser cultural divergencies between Coast Chukches and Eskimo, have been beguiled into giving these latter a too great distribution. Even GERLAND, however, proved that the Eskimo only inhabit the east coast, where their scattered villages, which are always placed on the most projecting point of the coast, are found between East Cape and Plover Bay. According to BOGORAZ, there are nine pure Eskimo settlements, two of which lie at East Cape, and the rest on both sides of Indian Point. Altogether 1200 Eskimo are found here. The Eskimo settlements, in this way, change places with the Coast Chukche settlements; but when one gets north of East Cape the latter hold sway. Along the north coast of Siberia the Coast Chukche settlements are situated between East Cape (170° W. long.) and Tschaunbay (170° E. long.). The

stretch from East Cape to Koluitschinbay (174°50' W. long.) is most densely populated, and this is also best known from the wintering of the "Vega" in 67°5' N. lat. and 173°23' W. long.

NORDQUIST counted 50 settlements altogether, the total population of which he estimated at 2000. Along the coast towards Bering Sea the Coast Chukches also hold sway from 172° W. long. to about 172° E. long., where they are displaced by a population of Koryaks, which again on the Kamchatka Peninsula south of 57—58° N. lat. is displaced by the Kamchadales.

Amongst the many names, which in the course of time have been given to the Asiatic Eskimo, without, however, any of them having been allowed to cling and become a permanent designation, are mentioned *Namollo*, which was used by LÜTKE, and *Onkilon* used by WRANGELL. According to BOGORAZ these words are supposed to originate respectively from Koryak and Chukche, and signify "coast inhabitant" or "sea people" generally, without any regard to their relation to tribe. HOOPER introduced the whale hunter's expression *Tuski* the origin of which is somewhat obscure. DALL in his later works called the Asiatic Eskimo *Chuklukmut* after a locality Chukluk. Finally their own designation for themselves *Yuit* (plural of yuk, "man") has obtained more common use through American authors (first employed by the Zoologist W. STIMPSON). In this connection it may be mentioned that the Eskimo at St. Lawrence Island are in language as well as in mode of living closely connected, so that one must assume that the island has been populated from Asia.

When the Eskimo, in spite of the favourable geographical conditions, do not occupy a greater territory in North Eastern Asia than is the case, it is owing to these districts having been occupied by other people, who must have been present long ago, possibly even when the Eskimo arrived there. A number of these already mentioned people have, however, allowed themselves to be strongly influenced by the Eskimo. The Coast Chukches have even adopted the Eskimo economic culture, so that in this respect one can hardly distinguish between the two peoples. The Coast Chukches — especially those at the Arctic Ocean — have adopted the Eskimo ice hunting methods, and the implements for these. Yet they have preserved their Asiatic manner of putting-to the dogs, namely, so that one pair goes in front of the other in a long row, whereas the Asiatic Eskimo place them in a transverse line, in the manner common to the Eskimo.

The Coast Chukches employ a tent dwelling similar to that of the nomadic Chukches, which I formerly<sup>1</sup> assumed to be a remnant from the original nomadic existence. Now, from BOGORAZ' investigations, it is plain, however, that the Chukches were coast dwellers before they became nomads, and JOCHELSON is probably correct in stating that these old Palæasiatic coast inhabitants, the forefathers of the Coast Chukches and Coast Koryaks, originally lived in earth huts. With Chukches and Koryaks, reindeer nomadism must be comprehended as a form of economic culture which parts of these tribes have adopted by imitating other tribes — whether these tribes are Youkhagirs or others will not

<sup>1</sup> STEENSBY, I, p. 119.

be conjectured here. With reindeer nomadism these branches of Chukches and Koryaks have also obtained a tent dwelling, which, according to JOCHELSON's supposition, is "built after the type of the dwelling of the Asiatic nomads, but adapted to the needs of the Arctic climate." A form of this winter tent is now again adopted by Coast Chukches and Asiatic Eskimo in place of their former earth hut. BOGORAZ only found one winter earth hut still in use with the Eskimo. Snow houses are not employed.

With regard to the character of the methods of subsistence the Eskimo form is predominant, not only with the Asiatic Eskimo themselves, but also with the Coast Chukches who live amongst them, and still further north at the coasts of the Arctic Ocean. On the other hand the Eskimo influence is smaller with those Coast Chukches who live on the Pacific Coast south of Bering Strait, and this holds good in a still lesser degree as regards the Coast Koryaks. These are, however, somewhat influenced by the Eskimo; JOCHELSON is even of opinion — from a study of legends — that he can assume that Eskimo and Koryaks have once been in direct contact. For the rest they have borrowed in various ways from Eskimo culture through the Chukches. A specially characteristic example is the kayak. It is not employed at the coast of Bering Sea, and even the Eskimo round Indian Point seldom employ it<sup>1</sup>. But then one finds it quite isolated with the Coast Koryaks at Penshina Bay in the Sea of Okhotsk. The occurrence must be explained by the fact that the kayak has come here not along the coast but along the Penshina River from the Anadyr River, where, in the central stream, its employment is regular and important at the autumn hunting of the herds of reindeer which swim the river.

Maupok hunting is carried on in the winter by the Eskimo and the Coast Chukches. In the spring, a form of Utok hunting takes place, and during the whole of the winter and spring, when there is open water or cracks in the ice which can be reached from the coast with the aid of the dog sledge, hunting of seal and walrus from the edge of the ice is carried on. On this occasion the kayak is employed, and it is also used at the coast of the Arctic Ocean during the summer. Sealing-nets are employed during the winter, both vertically along cracks or between two breathing holes, and horizontally beneath the breathing holes, as at Point Barrow. In the summer, nets are set in open water at places where the seals are fond of moving along the shore. On account of the considerable profit which it yields walrus hunting is of special importance here. Formerly whale hunting was of importance; ALDRICH<sup>2</sup> gives a description of whale hunting which calls to mind that of the Point Barrow Eskimo. As users of the umiak, the frame of which is of drift-wood and the covering of walrus hide, the Asiatic Eskimo rank high; like the under-mentioned islanders in Bering Strait they use sails, and undertake long hunting and trading journeys in umiaks. Reindeer hunting in the interior cannot have the same importance for Coast

<sup>1</sup> BOGORAZ saw only one specimen. LÜTKE (pp. 452—53) found that the Eskimo here to the great contempt of his Aleutian travelling companions did not understand the handling of a kayak.

<sup>2</sup> ALDRICH, pp. 56—57.

Chukches and Eskimo as it has for the American Eskimo, because most of the hunting is done by the Reindeer Chukches, and other inland tribes. The majority must therefore stay at the coast all the year round, and they generally can only satisfy their inclination for reindeer meat by exchanging seal blubber for it. In earlier days, according to BOGORAZ, people from Pacific settlements used to go up the Anadyr River to take part in the reindeer killing on the water. Fishing plays no great rôle with the Eskimo and North Coast Chukches. In case of emergency a number of sea fish are caught, but the great salmon fishings in the streams are not carried on up north, because it is only in Anadyr River that the salmon begin to occur in great quantities.

These salmon fishings are of great importance for the Pacific Coast inhabitants south of the Eskimo area, but besides this, the means of subsistence is here also characterized by the hunting of whales and seals. Here, from the South Coast Chukches to the Coast Koryaks and Kamchadales, and further south to the Giljaks, Ainos and Japanese coast inhabitants, we have an indigenous North-east Asiatic, or better, Pacific Asiatic economic culture, which, no doubt, is proportionately old, and the presence of which has hindered a more southern distribution of the Eskimo culture. From a geographical point of view it would be quite possible that the Eskimo culture in its Subarctic form might extend as far south as Kamchatka and the Sea of Okhotsk, perhaps even to the mouth of the Amur.

Only a more exact investigation would be able to make clear the extent to which elements of Eskimo culture have entered into this original North-east Asiatic Coast culture. BOGORAZ assumes that the detachable harpoon head employed by the Eskimo has reached the Amur along the coast of Asia. This, however, cannot mean that the North-east Asiatics first learnt the use of the harpoon from the Eskimo. The harpoon is an implement so widely distributed and so general, that we have no reason to believe that the North-east Asiatics have not always used it when hunting aquatic mammals. It only can mean then a specific kind of harpoon head<sup>1</sup>.

The distribution of the kayak has been mentioned. The seal hunting of the North-east Asiatics, which takes place especially in the spring and autumn but not in the winter on account of the conditions of weather, is therefore not carried on from kayaks but from open boats. The boats employed at the seal hunting are generally rather small, and hold two men, a rower and a harpooner, just as one knows it, for instance, from Japanese drawings of Ainos hunting seals<sup>2</sup>.

At the whale hunting, on the other hand, which originally no doubt played a larger rôle than the seal hunting, larger boats which hold several men are employed. The mode of procedure with whale hunting quite calls to mind the already mentioned mode of procedure with the Eskimo at Point Barrow and

<sup>1</sup> It is of interest to notice the likeness between this harpoon form from the Amur and the Eskimo form used for White Whale hunting even by the Polar Eskimo; cf. M. O. G., Vol. 34, fig. 35 and SCHRENCK, table 42, figs. 3—4.

<sup>2</sup> Cf., for example, MAC RITCHIE, fig. 114.

at Bering Strait. With the Coast Chukches and the Coast Koryaks, this larger boat was covered with skin, just as the umiak is. The form differs however, inasmuch as the first mentioned have an ordinary Eskimo umiak while the latter have a deviating form. With the Kamchadales and southern coast inhabitants the boats are, however, always of wood.

The employment of nets by the North-east Asiatics has still to be mentioned. They are not only used as fishing nets, but also for seal hunting. This seems especially to be the case in the autumn, when the seals go into the mouths of rivers<sup>1</sup>. The methods of setting the nets correspond with those employed by the Eskimo.

It would be impossible, however, to describe this North-east Asiatic Coast culture in detail, as it is but little known. Not least does this apply to the economic conditions and the annual economic cycle. For the rest it is only with reserve that we can talk about a Pacific-Asiatic culture; it is only the economic conditions connected with the sea which have a character common to the Palæasiatics of the coast and the fishing population of North Japan.

### The Islanders in Bering Strait.

As specially typical centres of Eskimo economic culture may be mentioned the small islands in Bering Strait, the Diomedé Islands or Inalik, and King Island or Ukivok. Moreover, the isolated settlements on the lofty western and south-western coasts of Seward Peninsula may in several respects be reckoned as belonging to the above. In contradistinction to the St. Lawrence these small rocky islands are inhabited by American Eskimo. The Islanders themselves were regarded by DALL as a distinct tribe (Okeegmut), co-ordinate with the tribes on Seward, with the western groups of which they agree in linguistic and several other respects. They wear labrets, DESHNEV found this to be the case as early as in 1848, and they use the kayak, but are especially excellent umiak-men, and as such should here be pointed out as those who have brought the use of these water-craft, within the Eskimo culture, to the acme of perfection. To increase the sea-going power of the umiak they have introduced the probably original improvement of placing inflated seal-skins or flaps of skin on both sides of this, in order to heighten the gunwales in rough weather. With these improved water-craft they make trips between the two mainlands, and carry on a traffic which, even before the Russians had settled down at St. Michael, had brought Russian goods to America. The Reindeer Chukches obtained the goods by barter from the west, and sold them to the Asiatic Eskimo, who again sold them to the Islanders, receiving in exchange wood, reindeer skin, and ivory. This connection across the strait probably dates very far back, even if it has grown additionally active since European goods reached North-east Asia. In 1648, when SIMON DESHNEV sailed through Bering Strait, he found that the Diomedé-islanders were making war against the Asiatic Eskimo. A further

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<sup>1</sup> JOCHELSON, p. 542.

proof of the connection is the borrowing of articles of use (pipes, bird-bolas), and of words, which MURDOCH thinks he can prove to have been made from Asia.

From their umiaks the Islanders carry on walrus hunting, which appears to have been their principal means of subsistence. The ivory hereby procured they brought, as already mentioned, to Asia, but they were not contented with bringing the Asiatic goods to the nearest part of the American coast. Across Norton Sound they sailed southwards to Pastolik, near the mouth of the Yukon, where they met the Delta Eskimo. Northwards they sailed into Kotzebue Sound, the inhabitants of which undertook to convey the goods further to Point Barrow and Mackenzie. On these long trips sails were used. Nowadays a mast is set up amidships, and the sail, which is square, is stretched out at the top with a cross-bar. Originally, according to NELSON, they are said to have placed an upright on each gunwale, and fastened the top of a three-cornered sail to each of these. The fact that sails are used by these Eskimo is, moreover, mentioned from recent times by MURDOCH, and from older times by KOTZEBUE, who sometimes saw umiaks (baidares) with sails. Once he even mentions a flotilla of eight skin-boats with sails.

There can be no doubt that the use of sails has been borrowed from the Pacific-Asiatic coast people. It even seems that it came from rather far to the south among the latter. The description given corresponds closely to the mode of sail-carrying used among the Ainos, which they probably again have borrowed from the south, i. e. from Japan. (See for instance the excellent illustrations in Mac Ritchie, Pl. XIX, and p. 45).

Also the settlements of the islands have a peculiar character, lying as they do, so to say, pasted against the sides of the mountain, so that the houses almost have the character of pile dwellings, in that they appear to remind one most nearly of the form of the summer houses among the Kamchadales and Gilyaks, and should undoubtedly be explained as the result of a Pacific-Asiatic influence.

### The Yukon Eskimo.

The coast regions situated between the Seward Peninsula towards the north and the Aliaska Peninsula<sup>1</sup> towards the south is naturally divided into three parts. Near Norton Sound the coast is lofty as far as to St. Michael, and passes into a mountainous interior. From St. Michael to Cape Newenham, south of the mouth of the Kuskoquim, there is a low and swampy delta-coast. Lastly, around Bristol Bay, the country is again high and mountainous. The sea exhibits a corresponding peculiarity, being, off the delta, shallow over a large area, and this is especially the case off the mouth of the Yukon itself, between St. Michael and Cape Romawzow.

Between Norton Sound and that part of the Lower Yukon which has approximately a direction from north to south, there is a mountainous tract, the crest

<sup>1</sup> For brevity's sake I am here using the style of writing "Alaska" for the whole of the large North American peninsula, and "Aliaska" for the small peninsula which is continued in the Aleutian Islands.

or dividing ridge of which forms a boundary between the Eskimo and the Indians, the seaward side being Eskimo and the river-side Indian. In the district where the tributary stream Anvik rises, the Eskimo territory is narrowed even to a breadth of 20 kilometres; but after that it widens out enormously in the low, flat delta through which the Yukon and the Kuskoquim flow. Here the Eskimo do not disappear until at the beginning of the higher ground in 160° W. long. Here, the moment one sets foot upon the mountainous, wooded ground along the river, the skin boat is found to be replaced by the boat made of birch-bark, the dog sledge by the broad-fellied snow-sledge (toboggan), and the Eskimo by the Ingaliiks. South of the Delta the limit of the Eskimo goes east of the lakes Nushagak or Tickchik and Iliamna.

It is along the stretch of coast from Norton Sound to Bristol Bay that the transition from Arctic to Subarctic climate and form of culture is wholly accomplished. Norton Sound is still covered every winter with a continuous layer of ice; but in Bristol Bay an ice-covering rarely forms. In connection with this fact the dog sledge is only used in Norton Sound and as far as the Delta with its numerous freshwater arteries extends; not, however, further to the south than the Kuskoquim. This is also the southernmost point at which the most important animal which is hunted, the Ringed Seal, occurs in large numbers, "its range reaching the mouth of the Kuskoquim River, and extending thence in a westerly course across the sea in a line coinciding with the southern edge of the ice-pack."<sup>1</sup> The Bearded Seal is extremely rare further south than Bristol Bay. *Phoca vitulina*, on the other hand, is common everywhere, and formerly the Eared Seals were, in addition, hunted every summer; lately the latter have been hunted so largely that their occurrence is almost entirely restricted to the uninhabited islets St. Paul and St. George, and the Siberian islands, Copper and Bering Islands. The walrus is of no importance, and occurs more singly; but formerly, an abundance of young males of walrus used to arrive every summer at the more distant Aleutian north coast of Alaska, WRANGELL<sup>2</sup> believed that they had been ousted by the old males which lived in northern regions.

The distinction which DALL made between the numerous Eskimo tribes in Western Alaska, and which was afterwards adopted by PETROFF, NELSON and others, is of no great interest in this connection. A difference of greater interest to us is that between the inhabitants of the lofty coasts of Norton Sound, where the settlements are located on islands and headlands, and the Delta Eskimo whose settlements are situated along the rivers.

OGILVIE and NELSON have described how life is spent at Norton Sound all the year round. In the spring months, March, April and May, or from the moment when the day becomes somewhat long until the ice becomes insecure, the men go out seal hunting on the ice, without, however, taking up their abode on it in snow houses. In early spring the Maupok method is used, but Utok hunting is the more important during spring. Later on, when the ice is inter-

<sup>1</sup> NELSON, II, p. 262.

<sup>2</sup> WRANGELL, p. 51.

sected by large cracks, the seals are hunted at the cracks, and the kayak, which the hunter takes with him on a sledge, is used to secure the booty, and to cross the cracks. During the first months of summer, bird hunting is carried on, as also salmon-fishing in streams. Late in July, and in August, the inhabitants from the southern part of Norton Sound and many Delta Eskimo assemble at the mouth of the Yukon and arrange a *battue* to kill White Whales, when, in their kayaks (baidarks), they surround them and drive them in towards the flat shore. This White-Whale hunting, which is pursued both at the Yukon and the Kuskoquim, is mentioned by several authors, and appears to play an important rôle, especially with the Delta tribes.

When the White-Whale hunting is over, the people from Norton Sound go up into the mountains for the purpose of hunting the reindeer, and when well into October the reindeer hunt is over, and the ice has begun to form along the coast, a great abundance of a kind of small torsk is caught through holes in the ice, partly with hooks and partly with a kind of tin-bait. During the darkest period they live and feast on the stored up supplies of fish, reindeer meat and blubber, as long as these last. Nowadays, during the long, dark winter-nights, some seals are caught in nets which are set out in the sea at the headlands of the coast.

OGILVIE<sup>1</sup> states, regarding these coast inhabitants at Norton Sound, that "they are in every respect superior to any tribe of Indians with which I am acquainted." Quite contrary to this favourable opinion are the accounts given of the standing of the Delta Eskimo. Thus, JACOBSEN writes that the inhabitants of the Delta between the Yukon and the Kuskoquim exhibit the highest degree of filthiness and, setting aside that as a rule they do not make fire and cook their food, live in wretched caves the interior of which, especially during spring-time, resembles a morass. From MC GRATH and J. H. TURNER, who were staying there during 1889—1891, we have the following description<sup>2</sup>. "The inhabitants of the banks of the Lower Yukon are perhaps the most destitute Indians<sup>3</sup> in Alaska. They have no idea about personal cleanliness. During the regular flooding of the Yukon Delta in springtime they flee in their boats, in order, immediately on the fall of the water, to return to their miserable damp huts which really do not dry up the whole year through. Partly this and partly the almost exclusive fish diet," the author thinks, causes diseases.

A Swede<sup>4</sup>, whom JACOBSEN found residing in the Delta as manager of a trading station, gave the following description of the inner Delta: "In the summer the monotonous plain of the Tundra is broken by numerous lakes and dams, and by silver shining rivers, brooks and tributaries, so that one relatively easily finds one's way there, but in the winter land and water constitute one single monotonous surface covered by a white carpet which for hundreds of

<sup>1</sup> OGILVIE, p. 137.

<sup>2</sup> LINDENKOHL, p. 136.

<sup>3</sup> Here "Eskimo Indians" are meant, American authors often using the term "Indians" in a sense also including the Eskimo.

<sup>4</sup> WOLDT (Norwegian edition), p. 280.



miles spreads over the plain like a shroud, while the sky, which generally is overcast, is arched over it all like a changeless, grey bell. No tree, no bush shows the way for the traveller, no house and no totem pole beckon kindly in the distance. Only the flat roundish Eskimo huts project a few feet above the plain, if they are not entirely hidden in the snow which often happens."

The fauna of the Delta is characterized especially by its wealth of fishes and by its numerous migratory birds during summer. On the other hand, the reindeer is no longer found between the Yukon and the Kuskoquim, and it is, on the whole, rather doubtful whether these swampy regions with their predominantly mossy vegetation were ever liked by the reindeer herds that are found to this day immediately north and south of the Delta. After the Mackenzie Eskimo, there are no Eskimo who are provided so easily and abundantly with wood as the people at the Yukon and Kuskoquim, which rivers come from forest regions and carry drift-wood. According to WRANGELL the mouths of the rivers may even at times be blocked with tree trunks.

The chief article of food is, as already mentioned, fish. JACOBSEN<sup>1</sup> reports about this that the dried and slightly smoked salmon (Yukala) is the chief article of subsistence. — "They are ichthyophagists in the real sense of the word." Those families who neglect to put by stores of fish suffer famine during the winter. On the other hand, the Yukon Eskimo have not, like so many of the hitherto mentioned groups, the opportunity to carry on reindeer hunting largely in the autumn. Fish is, therefore, their only stored-up food apart from the blubber from seals which were hunted on the coast-ice in the spring, and White Whale which was hunted in the late summer. In this way the Delta inhabitants visit the sea twice a year. In the spring the journey is made in a dog sledge, for which reason they have to be back before the river ice breaks up. On the second journey the kayak is used.

It is very doubtful, however, whether this description applies to the Eskimo who live at a greater distance from the sea. Probably these live in their settlements all the year round, where, like the Indians at the Yukon proper, they carry on fishing from the open waters during the summer, and from openings in the ice during the winter; but as they are without the Indians' hunting of big game, such as elk and reindeer, as also the eventual seal and White-Whale hunting of the coast inhabitants, their means of subsistence is more scanty, and their life more monotonous, even if their existence is sufficiently assured by reason of the great abundance of fish in the many arteries and lakes. According to PETROFF one could as late as in 1880 reckon over 6000 real Delta inhabitants.

One must by no means confound this more monotonous and indigent existence with a primitive state of culture, as RINK has allowed himself to be beguiled into doing. The culture in the unattractive swamp delta with the easy access to fish-food and unnecesariness of carrying out most of the Eskimo occupations is not characterized by primitiveness, but by decay. The implements

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<sup>1</sup> WOLDT, p. 190.

and the observations of a social kind which one has from the Delta inhabitants show that they are in possession of a specialized Eskimo culture, which already, as regards all South-West Alaskan-Eskimo, is so strongly maintained by MURDOCH in his criticism of RINK's theory about the origin of the Eskimo.

It cannot be said, either, that at the Yukon the Eskimo have a transitional form between Eskimo and Indian culture. On the other hand, the Eskimo culture from the Yukon and southward has adopted some Indian and also Asiatic traits, so that, as opposed to the northern forms, it has in many respects had a new and heterogeneous stamp impressed on it. Amongst such heterogeneous features may be mentioned the dress, in that the fur jacket is distinguished by its length, and by frequently being without a hood, as also by being made from the skins of martens, ground-squirrels or birds. Instead of the hood, the North-west Indian hat of platted vegetable fibres and roots is now met with in the southern Yukon region, Kadiak and the Aleutian Islands. A North-east Asiatic influence manifests itself in the building of the houses, in that here one finds the Palæasiatic earth-house, which is still employed in Kamchatka. Indian influence, no doubt, especially appears in social and religious matters, inasmuch as, partly, and after the plan of the North-west Indians, a real tribe-formation begins and partly a down-right adoption of Indian customs takes place, such as their way of burying the dead in common burying places, with the corpse in a wooden coffin<sup>1</sup>, and also the great distribution of gifts at the festivals<sup>2</sup>. Of late there has also been occasion to observe this influence from the south. When the Russians came to Yukon only the kayak for one man was known, but the kayak for two men customary at Kadiak and the Aleutian Islands gradually gained ground. That the single-bladed and double-bladed paddle was used with the kayak indiscriminately can probably also be referred to the greater contact with the Indians, but what RINK assumed, that the single-bladed paddle is predominant here, is by no means correct. On the contrary, everything points to the fact that it plays a subordinate rôle. Finally it must be mentioned that a kind of fish-trap<sup>3</sup>, which during summer and especially during winter is of great importance in the Delta, must probably originate from Asia. It is not found further north than Norton Sound, and at the Yukon not above the mouth of the Koyukuk<sup>4</sup>. This distribution, together with the fact that it is not known in the interior of Alaska or in the Hudson regions, indicates that the fishing apparatus has come to the Yukon Eskimo along the coast, and from them to the nearest living Indians on the Lower Yukon from the Delta to Nulato at the mouth of Koyukuk. The same group of Indians has been influenced in the same way as regards house building, in that they use the same form of house as in the Delta, and, as there, collect the houses in settlements. A further description of these matters is not to be given here, however. It will only be mentioned

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<sup>1</sup> Cf. BAHNSON, II.

<sup>2</sup> SAGOSKIN, p. 552.

<sup>3</sup> OGILVIE, pp. 171 sqq.

<sup>4</sup> OGILVIE, l. c.

that the Indians in the Yukon valley, on the stretch which runs parallel with and close to the east coast of Norton Sound, have, therefore, in some respects imitated the Eskimo.

### The Kadiak Eskimo.

The Yukon Delta and the sea region east of Bristol Bay is the last large territory which is occupied entirely by the Eskimo. Certainly they are still found on a stretch along the coast of the mainland, but they are in scattered groups, between which other people push in. The Aliaska Peninsula is, properly speaking, Aleutian. On the north coast, according to PETROFF's map, the most eastern Aleutian settlement lies at the mouth of the Ugashik River (about  $157^{\circ}30'$  W. long.). On the south coast the Aleuts hardly reach so far, inasmuch as their eastern boundary is Cape Ivanoff (about  $159^{\circ}30'$  long.) and the Shumagin Islands. The remaining part of the south coast of Alaska as far as the beginning of Cooks Inlet, the south west point of the Kenai Peninsula, the islands in Prince William Sound and also Kadiak with the surrounding islands are again Eskimo, and finally the same applies in part to the little isle Kayak, which is inhabited by a small tribe which in the summer carries on salmon fishing on the coast of the continent between Copper-River and Icy Bay ( $141^{\circ}25'$  W. long.). This tribe uses the Eskimo skin boats and hunting implements, but its language is so Tlinkitically intermingled that its root sometimes has been supposed originally to have been Tlinkitic.

The coast of Cooks Inlet, the large indentation west of the Kenai Peninsula, is not inhabited by the Eskimo, but by a Kenai tribe closely connected with the Ingaliaks; the members of which like their kinsmen on the Lower Yukon have been strongly influenced by the Eskimo culture<sup>1</sup>. They use the kayak for hunting White Whale, which, in rather large numbers, resort to the lower parts of the bay. The animal, however, is not hunted direct from the kayak, but the hunter places himself on a staging of poles erected in the water, from which he hurls his lance, which has a slate head. When an animal is hit, he gets into his boat which he has ready and pursues it. Large whales, which also visit the bay, are not hunted by the Indians. When, in August, the whale hunting and the salmon fishing, which are carried on at the same time, are ended, they wander up in the mountains, where they hunt reindeer and mountain-sheep. In September or October they set out in canoes, which they have covered with raw reindeer hides, down the Suchitna River back to Cooks Inlet, where the winter is passed in earth covered winter houses which, judging from JACOBSEN's description, are of quite the same kind as the Eskimo houses on the Yukon and in Kadiak. This, then, is the third case of a non-Eskimo neighbouring tribe partly adopting the Eskimo culture.

The coast of the mainland between Mount St. Elias and Aliaska (from  $141^{\circ}$  to  $159^{\circ}$  W. long.) is on an average high and rocky, and much indented, with large and small bays. Close out to the coast run chains of mountains which,

<sup>1</sup> WRANGELL, pp. 103, 112 sqq.

especially towards the east, attain considerable heights, and do not leave room for a lower coast land. Such only occurs round the mouths of the Suchitna and Copper Rivers, and is like the river valleys of these, which form the only passages to the interior of the mainland, both inhabited by Indians.

Among the islands which are of a similar rocky nature as the mainland, the most important is Kadiak, the population of which may be regarded as being the type of these Pacific Eskimo. The climate is coldly temperate and damp. The sea, which is controlled by warm sea currents, never freezes, and even in the bays the strong tides prevent the forming of an ice covering. The southern mountain slopes to the east of Cooks Inlet are covered with beautiful forests, and the same is the case everywhere in Kadiak and the islands in the more protected valleys, whereas the south-east side of Aliaska is devoid of forest. The mammals of the continent do not play any rôle for the Eskimo of this region, as the Indians are in possession of the mountain districts and the river valleys where reindeer, mountain-sheep, and elk may be hunted. Thus the Eskimo are reduced exclusively to river and sea fishing, as also hunting of the aquatic mammals. As long as they have been known salmon and cod, which were caught in great quantities and, when dried, stored for winter supplies, have been their principal article of food. When the Russians arrived, three kinds of aquatic mammals were hunted: seals, whales (especially a species of *Balenoptera*), and the sea-otter. For hunting the two last-mentioned the two-man kayak (the baidare) was used. At the whale hunting a lance with a broad-bladed point of slate was used. When the hunter, who sat in the bow of the boat, had flung his lance, the object was to make a hasty retreat. During the animal's writhings the slate point broke off and remained in the wound. The prey was left entirely alone and to its fate, until one day it was washed ashore. Naturally many may be lost in this manner; but for the rest the hunters believe that wounds caused by slate spears prove fatal more quickly than those caused by iron, and they have stuck to the slate-blades obstinately. With sea-otter hunting, the hunter always used a bow and arrow, the latter really being a small harpoon, the point of which was connected with the shaft by a line. The hunting was not carried on by single baidares, but as a *battue*, in which about one hundred boats took part. Originally sea-otter hunting was of slight importance to the natives compared with later times, when the Russians bought up the skins. Then the hunting of the sea-otter was taken up to such a degree that in the course of some decades it became almost exterminated.

Originally it was also possible to hunt Eared Seals here, but now, at any rate, they have disappeared. Of the real seals, according to NELSON and TRUE, *Phoca vitulina* is the only kind which occurs in large numbers. Besides in the Bering Sea it is also common along the Pacific Coast east and south of the Aleutian Islands as far as the southern point of the Alaska territory. At Kadiak seal hunting takes place exclusively from a kayak, and from HOLMBERG's report it seems to be evident that the bladder-spear plays a predominant rôle. Sometimes the hunter places a stuffed seal on the rocks as a decoy, and himself remains hidden in the neighbourhood until a seal has been enticed to creep out of the water.

Of hunting implements HOLMBERG observed altogether 6 kinds, the bladder-spear, two kinds of spears and harpoons for whales and seals, two sizes of arrows for hunting sea-otter and bear, as also the three-four pointed bird-spear. Besides being shot from a bow, the bird-spear was thrown with a throwing board, and this latter method was exclusively the case with the bladder-spear and the harpoons. As material for the implements drift-wood was preferably used, the home kinds of wood being found practicable only for building houses.

The winter house is an earth house similar to the one at the Yukon, and the summer dwelling is the skin-tent of the "Tipi" type. Besides the baidark and the baidare (one-man and two-man kayak), the Kadiaks and the neighbouring tribes on the continent used the umiak, which was at times so large that it could hold 30—40 persons. Before the arrival of the Russians it was used principally as a war-craft, as war between the tribes at that time was the order of the day. The dress was almost similar to that at the Yukon. The Russians paid the greatest attention to the long fur coat, the "parka," which was made from the skins of birds, sea-otters or ground-squirrels (*Spermophilus* sp.), and also to the "kamleika" which was of seal-gut, and was used in the kayak. As at the Yukon, the "parka" was without a hood, and as a head covering at sea the platted hat was used.

When the Russians towards the middle of the 18th century began to occupy Kadiak, they here found a comparatively numerous Eskimo population. When SCHELIKOV, about 1760, gave the number of inhabitants on the island as 30,000, it was, however, evidently an exaggeration. Even if the Russians at the beginning behaved rather cruelly and roughly, the population can hardly be assumed to have been so high. In 1760 the number is given as 6,206 individuals; but in 1880 the island had only 1262 Eskimo inhabitants besides some few so called creoles. That a great decrease in the population has taken place one must consider as granted, and also, as regards culture, that so much was lost and changed even in the first decades of the intercourse with the Russians that it is difficult now to form an exact view of the original conditions. The first Russian authors mixed up the Kadiaks and the Aleuts without further ado. Later, when the great linguistic difference was perceived, the name Konjag was introduced, which is said to be a distortion of the Kadiak's self-designation "Kanagist<sup>1</sup>."

A few general remarks may be made, however, on the Eskimo culture at Kadiak and the neighbouring regions. Firstly that the North-west Indian influence is stronger here than at the Yukon. This especially manifests itself in the structure of the community, inasmuch as here, as with the North-west Indians, we find class distinction, slavery and also a distinct tribe formation with chiefs and war expeditions. This influence has manifested itself less in the material culture, where it must be looked for in the ornamentation and decoration of the implements. The implements themselves are purely Eskimo. Of the two characteristic possessions, the "baidare" and the whale-lance with slate head, the first seems to be an original alteration of the kayak, whereas

<sup>1</sup> BANCROFT, Vol. I, p. 69.

the invention of the latter is more obscure. The next point to be emphasized is that between the South Alaskan Eskimo on the one side and the North-west Indian Tlinkites on the other side there is no transition, but a sharp contrast. All judges of the Kadiaks have agreed in assuming that they came from the north. WRANGELL<sup>1</sup> advances their own traditions for it. ERMAN<sup>2</sup> draws attention to the fact that, as they use the skin-boat in the neighbourhood of richly forest covered districts, this can only happen on account of tradition. Finally MURDOCH<sup>3</sup> asserts that the using of the sinew-backed composite bow by the Eskimo in Kadiak and South Alaska is a proof that their culture germinated in regions lacking wood, or, in other words, in Arctic regions. As a further proof of this may be mentioned the stated traditional predilection for drift-wood for implements.

### The Aleuts.

The peninsula of Aliaska together with the chain of islands which form the southern boundary of Bering Sea is, geologically speaking, a continuous series of volcanoes. The country is high and mountainous, and the coasts are irregular and rocky. The climate is comparatively mild, but damp and raw, with much fog and a considerable rain-fall, and storms prevail at certain seasons of the year. It is rare for the bays to be ice-covered, and then only until the first strong wind occurs. Woods are wanting, so that the inhabitants are chiefly dependent on drift-wood. On the north coast, and on a part of the south coast of Aliaska, as also on the group of islands as far as the island of Attu (53° N. lat., 187° W. long.) there lives a tribe, the people of which are also called Aleuts by the Russians, while they originally called themselves Unung'un (human beings, or people).

From a linguistic point of view they occupy a peculiar position as compared with the Eskimo, while culturally they stand on the same plane of development as the inhabitants of Kadiak, where the geographical conditions are in several respects the same. But here too, the conditions are nowadays so greatly altered through the influence of the Russians, that the Aleuts described by ELLIOT do not greatly recall the Aleuts of an earlier date. The present Aleuts have a strong mixture of Russian and American blood. They gave up using their old skin clothes a long time ago, as they did the custom of wearing labrets, and the use of the meeting house (kashim), which was originally found in every settlement. The introduction of Christianity was synchronous with the disappearance of their festivals and peculiar dances, in which men and women danced separately, with their faces covered by painted wooden masks, which were usually carved in fantastic forms.

But the European culture has not been able to influence their means of livelihood or their "economical culture" to any great degree. As before the

<sup>1</sup> WRANGELL, pp. 117, 124.

<sup>2</sup> ERMAN, p. 169.

<sup>3</sup> MURDOCH, II, p. 130.

discovery, so now, fishing and the hunting of aquatic mammals form their only occupation, and the Aleut's food still consists chiefly of dried or raw fish, and of sea-urchins and other testaceous animals. Fish is caught with hook or net, and in this region, where the sea is never frozen over, the aquatic mammals can only be killed from kayaks, therefore in the Aleutian Islands it has always been, and is to this day, a necessity for every man to be a clever hunter. The use of the kayak for one man (the Baidark) requires the usual appurtenances, viz., a water-tight jacket, double paddles, throwing boards and harpoon. As regards the skill with which they manage their water craft, the Aleuts are equal to the Greenlanders, and VENJAMINOV expresses his admiration in his remark, that he does not know "whether the Baidark was created for the Aleut or the Aleut for the Baidark." The Baidare or two-men's kayak is used just as at Kadiak for hunting the sea-otter and the whales, which aquatic mammals are hunted with bow and arrow and slate-bladed throwing lance respectively. The kayak for three was not an original form, but came into existence, through Russian influence, as a quick and convenient travelling-boat that could hold one passenger and two paddlers. The umiak is now rare, and has probably, as at Kadiak and in Prince William Sound, been used for purposes of war as well as for travelling.

After the Aleuts were discovered on BERING's last voyage, and had again been visited in 1745, a long time elapsed before the Russians discovered that the people they met on the Aleutian Islands and on Kadiak belonged to two different tribes. For a long time they designated them commonly as Aleuts, and it was as late as about 1785 that SCHELECHOW observed that a decidedly linguistic difference existed between them. VENJAMINOV, who lived from 1824 to 1838, partly on the Aleutian Islands and partly on Sitka, proved this definitely.

VENJAMINOV, on the basis of tales and myths which, however, he has misinterpreted (cf. for instance PETROFF), tries to show that the Aleuts are of Asiatic origin, and the Aleutian Islands have often been made to serve as that bridge across which a stream of people immigrated from Asia to America. Even if one sets aside the language, which is of a type similar in construction to the American language, the cultural conditions, and the opinion current among the tribes themselves that they originated from the east, the idea of an immigration from Asia can be dismissed by simply referring to the close geographical connection with America and the distance from the other continent, as also to the fact that the western islands in the chain are, and have always been, uninhabited. The kitchen middens and other evidences of a former population, which DALL has investigated and demonstrated, cease simultaneously with the present colonisation of the island of Attu<sup>1</sup>.

The next interesting and important question which presents itself concerns the reciprocal relation and kinship of the Aleuts and the Eskimo. That the Russians failed to see the difference between them was due to the mate-

<sup>1</sup> DALL III, p. 43.

rial culture, which, so to speak, was similar in all respects, and to the racial characters, which also differed in no great degree. On the other hand, the linguistic difference is so great that Aleutian cannot be regarded as a branch of the Eskimo language, but must rather be regarded as collateral with Eskimo, perhaps even with such linguistic groups as the Tinne and Algonquin. It is divided into a western and an eastern dialect, Atkic and Unalaskic, which, however, do not differ greatly.

J. H. E. BUSCHMANN expresses the results of his investigations of the Aleutian and other North American languages as follows: "Ich kann das wichtige Endresultat meiner Untersuchung verkündigen: dass, entgegen diesem gemeinsamen Stoffe, sich das aleutische Idiom (man kann so über beide Dialecte absprechen) in seiner Masse, durch den Besitz ganz anderer, eigenthümlicher Wörter, als ein eigener, von dem grossen eskimoischen ganz verschiedener Sprachtypus erweist." BRINTON<sup>1</sup> contests this view, he says regarding the Aleuts that it may be regarded as a positive fact that their ancestors "populated the islands from the American and not the Asiatic side. Not only do their own traditions assert this, but it is confirmed by the oldest relics of their culture, which is Eskimo in character, and by their language, which is generally acknowledged to be a derivative of the Alaskan Eskimos." In support of the phrase "a derivative of the Alaskan Eskimos" BRINTON cites H. WINKLER (p. 119) and W. H. DALL (III, p. 49), and writes regarding the latter, that DALL "states that their tongue is distinctly connected with the Innuits of Alaska." But on looking up the passage in question in DALL, one finds that he expresses nothing definite regarding the relationship, nor does he state that Aleutian can be derived from Eskimo. DALL, after having shown that the Aleut-culture is a particularly specialized Eskimo-culture which owes to the natural conditions its — according to his opinion — higher and finer development, goes on to say that "this improvement is evident, among other things, in the greater development of the possibilities of the language, in its more perfect grammatical construction and in a more perfect numerical system." It must be these words to which BRINTON alludes. But it is evident that the development DALL is thinking of here relates to the culture, and that nothing is said about the genetic relationship of the two languages. Then, on looking up WINKLER, it is impossible to understand the passage in question as BRINTON would have us to understand it. In his enumeration and treatment of the North Asiatic languages WINKLER mentions also the Eskimo language, regarding which he writes, *inter alia*, that it is more closely related to the American languages than to the Ural-Altaic languages. After that the Yukagiric language is inserted, and lastly comes the Aleutian, regarding the relationship of which he only writes: "Trotz des vielfach hervortretenden uralaltaischen Anstrichs ganz selbständiger Sprachtypus . . . doch auch der Auffassung nach wesentlich vom uralaltaisch abweichend". Nothing is said about relationship to the Eskimo language, which, for the rest, is not referred to when he mentions Aleutian. We may then safely

<sup>1</sup> BRINTON I, p. 66.



state that the named linguists have not brought forward evidences of a closer relationship between Aleutian and Eskimo, and philology seems still to be in the same position in this matter.

When BAHNSON, who usually relies on DALL and RINK, states that "the Aleuts have, in a far-off past, separated from the Eskimo and developed themselves independently on their islands," it can in no circumstances be possible that such a separation has taken place after the Eskimo culture had come into existence. It would be absurd to believe that so decided a linguistic separation should have occurred between the inhabitants of the western and eastern parts of Aliaska, where, moreover, the closest contact existed between the two, and then that the Angmagsaliks and the Yuits, the Labradors and the Kadiaks should still speak almost the same language. In reality only two possibilities are left. Either the Aleuts themselves have invented the kayak, harpoon, etc., independently of the Eskimo or their culture has been borrowed from their neighbours at a later period. When the latter migrated from the north along the coast of Alaska they encountered the Aleuts at some definite period, and communicated to them their peculiar culture. Consequently, one must surmise that the Aleuts stand in a similar relation to the South Alaskan Eskimo as the Coast Chukches do to the Asiatic Eskimo, and there can hardly be any doubt that the last-mentioned opinion will prove to be the only right one.

This opinion is contradicted by the assertion that the oldest remains of the culture of the Aleuts have been proved to originate from an Eskimo culture. It is not difficult, however, to show that this assertion is incorrect.

From the finds made in the numerous refuse-heaps from Alaska to Attu, investigated by DALL, it appears that the cultural remains are found in three layers, which are fairly distinctly separated, and correspond to three cultural periods: —

- I. The sea-coast period which is chiefly represented by Echinus-shells.
- II. The fishing period, in which fish bones form the principal feature.
- III. The hunting period, in which bones of mammals occur.

At the transition to layer II sinkers for fishing-nets begin to appear, and probably the introduction of the fishing net is the principal difference in culture which corresponds with these two layers, after which testaceous animals cease to be the chief article of food, and are of comparatively minor importance in the daily fare, of which fish now becomes a highly important item. Therefore there is a sharp boundary between the Echinus-layer and the layer with fish bones, even if the use of testaceous animals as an article of food never wholly ceases at any point of time. Fish continues, however, to be the main constituent of food down to the present time, and so fish bones are not only predominant in the layers of the fish period, but are also found in quantities in those of the hunting period. The latter layer was found wherever excavations were made. The layer varied in thickness in the different places, and many of the heaps contained this layer only, which DALL regarded as testimony of the population having increased in numbers.

That the transition from the sea-coast period to the fishing period is not due to a gradual development, but is occasioned by the fact that, somehow or other, a new culture-element, the fishing net, was introduced, really can hardly be doubted. On the other hand, some authors, and among them BAHNSON, are of opinion, that from the beginning of the fishing period to the arrival of the Russians a constant and gradual development from fishers to hunters has taken place, and he mentions, in support of his opinion, that during the hunting period there has been a transition from the implements of former times to the later Eskimo form of implements. This is quite right; but the main point to be remembered is, that these previous forms of hunting weapons are not mere lance-heads, but real harpoon-heads of an older Eskimo type. These bone harpoon-heads occur suddenly at the transition to the layer of the hunting period, and it should be remembered that on the Aleutian Islands these forms are used to this day, along with the more perfect and skilfully made harpoon-heads of more recent date. Consequently, this development in the form of the implements does not differ from that which has also taken place among the Eskimo themselves, and which may be traced up, for instance, in Greenland.

These observations alone, appear to favour the belief that the transition from the fishing to the hunting period must likewise be due to the introduction of new elements of culture, which in this case must be harpoons and kayaks, as here the use of the harpoon would be impossible without the kayak. It is probable, of course, that even the Aleutian fishers possessed a water-craft, but it was not the kayak with its appurtenances. The only probable surmise as to how they have come into possession of this highly complicated contrivance is that they have borrowed it from the Eskimo. As they gradually taught themselves its full use and utility the mammals would play a more and more important part where food was concerned, and their skin would become an important factor in the making of boats, clothes and houses. This view is supported by the fact that such implements as are used for skin dressing are not found until the lower layers, which belong to the hunting period, are reached.

DALL himself was of opinion that the boat of the fishing period gradually developed into the kayak, but that the former, owing to its having been very simple and without any ornamentations, had not left any such traces as the kayak had, of which some of the small ivory pieces for the paddles, and other ornaments, are found in the layers of mammal remains. But, in reality, such a development quite lineally is inconceivable in the case of the sea-kayak, the use of which necessitates the co-operation of so many heterogeneous elements, such as harpoon, throwing-board, lance, etc., each of which necessarily must have had its own history of evolution before it was taken in use on the kayak. Besides, DALL's own investigations of the layers of mammal remains show distinctly that the Aleuts immediately began to hunt aquatic mammals, the pursuit of which required the co-operation of the kayak and harpoon, *i.e.* the fully developed sea-kayak; the bones first found in the kitchen middens being those of the Eared Seals (Sea-bear and Sea-lion), two *Phoca*-species, *Phocaena vomerina*, *Delphinus orca* and in some places of the walrus. Only in the upper layers

of mammal-remains do there occur, in addition, the bones of the larger whale-species, such as *Balæna mysticetus*, *Balænoptera velifera* and *sibbaldii*, the Californian Grey Whale (*Rhachianectes glaucus*), and the Cachalot or Sperm Whale.

It is evident from this succession of layers, that the kayak must have existed during the whole of the hunting period, and that it must have appeared rather suddenly on the scene. And only one possible explanation is in accordance with this view, viz., that the kayak has been borrowed from the Eskimo.

Another point of interest is apparent from the succession of the layers viz., that the hunting of the large species of whales with baidare and lances with slate blades, — which is also known from Kadiak, but which has not extended further north than Aliaska, — is a method of hunting of rather late occurrence. This conclusion is justifiable, as both the bones of the animals hunted and the hunting weapons, the whaling lances with slate blades, occur late in the succession of layers. Other interesting observations may be made on DALL's investigations, but I shall refrain from further comment, as the sole task we have set ourselves here has been to elucidate the fact that the Aleuts are members of an originally independent tribe which adopted the implements and hunting methods of the Subarctic Eskimo.

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## A Comparison of the different Types of Eskimo Culture.

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### The Eskimo Territory a Unity as regards Communication.

ON surveying the description of the types given above, in which I have tried, geographically and ethnologically, to separate the component parts of the economic life of the Eskimo, there is an observation which once more calls for attention, viz., that nowhere between two groups has there been a boundary so strong that it has not now and then — if not regularly every year — been crossed by means of sledges in the Arctic regions or by boats in the Subarctic.

It has already been mentioned that, right down to our own day, there ran through Northern Alaska and along the coast of the Arctic Ocean an indigenous trade-route which connected the Mackenzie Eskimo with the regions towards Bering Strait. From the Mackenzie region to Coronation Gulf, from the latter to the Netchillik territory, and further eastwards to Baffin Land and Labrador, various travellers have found evidence of contact having taken place.

In certain cases, where the connection has been broken off in recent times, the cause appears always to lie in the fact that one of the groups has come under a strong and solely European influence. As an example may be mentioned the connection across Melville Bay in Greenland. The connection between the American Archipelago and Greenland forms an exception. This appears to have been now and then really broken off for anthropogeographical reasons, the Eskimo having decimated the musk-ox herds along the so-called "musk-ox route"<sup>1</sup> straight through the Archipelago from south to north and north-east. But as the musk-ox herds have not been entirely exterminated, they will be regenerated when the Eskimo are there no longer, and then there will be possibilities for an immigration of new groups of Eskimo. It appears, however, that these wanderings must have taken place especially from the Archipelago to Greenland; a movement in the opposite direction has undoubtedly been of rare occurrence, if it ever has taken place.

The first result, then of the present analysis of types is that the Eskimo region, in, spite of its extent, hangs together

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<sup>1</sup> Regarding this cf. M. o. G., Vol. 34, pp. 393 sqq. and map on p. 401.

as a unity, so far as communication is concerned. Or, to put it more exactly, did so until the white man disturbed the existing conditions. Consequently, it was possible for a new cultural feature which had originated in, or been introduced into, one place to be transmitted to all the Eskimo.

### Geographical Adaptation and Pacific-Asiatic Influence.

Analysis of the types of culture described above makes it evident that the cultural dualism, shown in the summer and winter pursuits respectively, is based upon geographical conditions; and, further, explains why the annual economic cycle varies so greatly from group to group.

A closer consideration will, however, show that also the other main reason for cultural development, viz., culture-contact or influence from without, must have co-operated in the development of at any rate certain sides of the economic culture of the Eskimo.

This is seen by comparing the Point Barrow Eskimo and the more westerly and still Arctic culture-groups in Alaska and on the Chukche Peninsula with the central Arctic groups in the Archipelago (Coronation Gulf and Netchillik).

Among the latter the summer is spent in hunting and fishing in the interior (kayak, lance, bow, arrow and fishing spear), and the winter in hunting on the ice (dog sledge and harpoon). Among the Point Barrow Eskimo and their neighbouring groups the same is found to be the case; but, in addition, the summer has provided a quite new occupation, which, as regards the season, collides with the inland-hunting, viz., whale hunting from umiak, and the winter has likewise provided a quite different method of acquiring a livelihood, viz., the catching of seals with nets.

The question now is, whether the Eskimo themselves have developed these pursuits, or whether they have borrowed them from without. Even the consideration that, in comparison with other Arctic groups, they represent a duplication of the methods of obtaining food may favour the belief that they have been borrowed. That they are younger than the other methods there can be no doubt, among other reasons, on account of their higher technical nature, and because they demand greater social co-operation. Since we know that the capture of seals with nets is carried on by the Pacific Asiatics along the Asiatic coast of the Northern Pacific Ocean, the only reasonable solution of the problem is furnished by the assumption that it is the Eskimo in the regions about Bering Strait who have learnt to catch seals with nets from the Pacific Asiatics, and not *vice versa* (in all probability it is from the Pacific Asiatics that the Eskimo have on the whole learnt the use of the net and not from their North American neighbours). Moreover, everything

shows that the whale hunting from umiaks carried on by the Eskimo along the west and north coasts of Alaska is borrowed from the Pacific-Asiatics. We have here the same alternative before us as in the case of the catching of seals with nets, in that we must presume that the one group of people have learnt from the other. We now know that whale hunting is old and of great importance among the Pacific Asiatics. This applies not only to the Coast Chukches and Coast Koryaks, but also to the Kamchadales — even STELLER<sup>1</sup> records whale hunting among these — and lastly to the Ainos and the coast inhabitants of Japan.<sup>2</sup>

Among all these coast peoples whale hunting is carried on from large boats, which hold a number of paddlers. Among the Koryaks these boats are made of skin, like the Eskimo umiaks, although they differ somewhat in type. Among the more southerly coast people, on the other hand, wooden boats are used. The small boats used for seal hunting are also made of wood — originally they were made by hollowing out the trunk of a tree; they have at the stern a paddler and in the bow a man who hurls the harpoon.

That the Eskimo's net-catching of seals and whale hunting from umiaks are originally borrowed from the Pacific Asiatics cannot very well be doubted. Even MURDOCH emphasized the fact that net-catching had come from Asia, and as a proof he stated that the Point-Barrow Eskimo's designation for nets was according to his opinion of Chukche origin, and that they have traditions of a time when they captured seals with the harpoon alone.

I must however also presume that the umiak has been borrowed from the same source, and has probably been introduced at the same time as the whale hunting, because the Eskimo required a large boat for this purpose. Whale hunting is, on the whole, the only occasion on which the umiak plays a direct rôle as regards gaining a livelihood. Otherwise the umiak is used only for travelling, and for this reason has degenerated into a contrivance to be used by women, "a woman's boat" (except on Kadiak where it was also used as a war-craft). Now it is quite unlikely, or, to put it more exactly, inconceivable that the Eskimo, at the outset and during their struggles to adapt themselves to the new natural conditions, should have created two such widely different water-craft as the kayak and the umiak, and both so highly developed. This would simply militate against the biological "principle of least action (in this case: least labour)," as, to begin with, they would be able to suffice with the kayak.

It must, of course, be left for later consideration whether the Eskimo themselves have produced the umiak by imitating the large boats and using the material at their disposal, or whether perhaps the Coast

<sup>1</sup> STELLER, p. 102; pp. 103 sqq.

<sup>2</sup> KÄMPFER, pp. 150 sqq.; P. de CHARLEVOIX, II, pp. 578 sqq.; W. HEINE, p. 57; cf. MURRAY'S Handbook for Japan [London, 1903], p. 252.

Koryaks have produced the large skin-boats which have then been adopted by the Eskimo. The nett result will be the same, that the Eskimo umiak first appeared in the regions about Bering Strait, and that it is due to the cultural influence of people living on the Asiatic coast of the Pacific Ocean.

That the Eskimo culture has also been influenced by other neighbouring groups must be taken for granted; but there can hardly be found any other group which has influenced the Eskimo economic culture so radically as have the Pacific Asiatics, who for practical reasons, are here reckoned as a single geographical group.

If, now, the umiak and the capture of seals with nets had been found among all the Eskimo, from the west to the east, there would have been no difficulty whatever in assuming that these things were borrowed from the Pacific-Asiatics. But then in the Archipelago there is a break in their occurrence. The umiak occurs among the Mackenzie Eskimo, disappears among the Eskimo in the Arctic Archipelago, and then reappears in Baffin Land and Greenland south of Melville Bay.

Nevertheless we must assume a distribution from the West Eskimo to the East Eskimo regions. Firstly, it is sufficient explanation for the absence of the umiak from the central regions, that there was no use for it; and for the absence of the net, and net catching, that it was not possible to obtain the necessary material for its manufacture, viz., whalebone. Secondly, within the unity in communication formed by the Eskimo region, there can have been no real barrier for the distribution in question.

The fact should be remembered that here we are not dealing with a population consisting of groups which differ widely as regards language and tradition, and where a distribution meets many hindrances, but with a people which has a close affinity of language, and is not separated into well defined tribes. The different groups, which, more particularly only in Alaska — presumably on account of Indian influence — present the characteristics of true tribes,<sup>1</sup> are not separated by linguistic barriers and are generally not even hostile to one another. Properly speaking, the groups occur as unities only by reason of their being geographically separated from one another. The sociological group-organisation does not extend beyond the settlement, a fact first demonstrated by RINK, and afterwards finely and more fully treated by MAUSS and BEUCHAT. But the organisation of the groups was not so fixed, or so hostile to others, that it prevented visits being made during the favourable seasons of the year, or the admission of new members, or other shiftings taking place in the population of the settlements. Consequently, both the sociological and the geographical conditions for the distribution of the culture-objects even over great distances outside the Eskimo domain were present.

<sup>1</sup> Cf. MAUSS & BEUCHAT, p. 50.

There is nothing which militates against the view that individuals who have known and used the objects in question from the coast of Alaska have themselves come to Greenland and there introduced their use. It is also possible that the distribution has taken place somewhat differently, that, for instance, attempts have been made from time to time throughout the whole region to build umiaks. Even the Polar Eskimo, according to KNUD RASMUSSEN, have traditions which state that umiaks were once used within their territory. Lastly, it is possible and — as I shall try to show below — most probable that from the regions about Bering Strait a regular stream of people has passed through the Eskimo districts from west to east. In the regions about Bering Strait a mixed Eskimo-Pacific-Asiatic population has arisen — mixed both as regards culture and race — and this mixed population has spread out towards north-west and east, following the Eskimo roads of communication, and carrying along with it the knowledge of the umiak, the net made of whalebone, etc.

### **Eskimo Summer and Winter Culture.**

It has already been pointed out in a previous chapter that, although the Eskimo are a primitive people, they are in possession of an unusually large number of implements, of which many are complex and, to speak technically, highly developed.

Their economic culture displays a similar variety. Not in the sense that there is a division of labour within the community as regards the various means of obtaining a livelihood, but because all the bread-winners of the tribe are obliged to carry on different occupations at the different seasons of the year.

We may safely say that among no other people is the annual economic cycle so distinct as among the Eskimo. The difference between summer and winter is especially marked, so that we can distinguish between an Eskimo Summer Culture and Winter Culture, which differ so highly that they are characterised not only by different methods of occupation, but in a great measure even by different sets of implements.<sup>1</sup>

This statement applies especially to the Arctic Eskimo, whose winter occupation consists in the various methods of hunting on ice, while their summer occupation is inland fishing and hunting. The Subarctic

<sup>1</sup> I pointed out the existence of this seasonal dimorphism, or difference between a summer and a winter culture, even in my preliminary paper on the subject (1905). MAUSS & BEUCHAT, in their interesting paper, have carried out my observations still further and tried to demonstrate a summer and a winter side also in the social morphology of the Eskimo. How far they have succeeded in this is a matter into which I shall not enter at present.



Eskimo, in the majority of cases, also practise inland fishing and hunting during the summer, or to put it more exactly, during a part of the summer, while during the rest of the year, the winter included, they hunt in kayaks on the open sea. Some Subarctic groups even pursue kayak hunting all the year round on the open sea, and special summer hunting in the interior has fallen into disuse; but it is evident that this is only of exceptional occurrence and due to the fact that access to the inland is barred in one way or another, either, for instance, by hostile tribes (South Alaska), or by peculiar natural conditions (Greenland). Consequently, the apparently simplest instance of the Eskimo annual rotation of occupations — viz., kayak hunting all the year round — is in reality a matter of simplification and not of primitiveness.

The difference between the summer and the winter culture is best shown in tabular form, but it should be borne in mind that only the most typical and important conditions have been considered. The following is the typical table for the Arctic Eskimo culture.

	Place of abode	Occupation	Principal Implements	Dwelling
Winter .....	In the beginning of the winter: The coast land. Later in the winter: The sea ice.	Hunting on the sea ice.	Dog sledge; harpoon.	In the beginning of the winter: Earth house. Later in the winter: Snow house.
Summer .....	Inland.	Hunting on land and fishing in rivers.	Kayak; lance; bow and arrow; salmon spear.	Tent.

Originally, all the Arctic Eskimo doubtless lived during the first part of the winter in an earth house. The situation of this was not strictly connected with the coast, as such; but its situation was dependent on two main considerations. Firstly, whether the stores from the summer fishing and the autumn hunting of reindeer could be turned to account at the place in question, and secondly, whether there was comparatively easy access to the sea ice. Now, however, a great many of the Arctic Eskimo in the Archipelago appear to have discarded the earth house and to have moved direct from the tent to the snow house which is now also used during the first part of the winter, while they live on what they have stored away during the summer and autumn. It is a period of the year which often has the character of being a festive season, if the supplies are ample, and a comparatively large number of people are gathered together. Later, when hunting on the sea ice begins, the people disperse, and live scattered over the ice.

As regards the above table for the Arctic Eskimo, those especially

referred to are the inhabitants of the Archipelago (the Eskimo near Coronation Gulf, the Netchillik district, etc.), where the Arctic culture is most distinct. Here the winter lasts nine months of the year, and the summer only about three. From an anthropogeographical point of view the winter ends when the winter ice breaks up on the sea and there is open water, and the summer ends when the fresh water is frozen over and the reindeer herds leave the tundra.

When one gets away from the Archipelago, along the coasts of Alaska, Greenland or Baffinland and Labrador, the difference in the seasons alters, the winter gradually becoming shorter and the summer longer; that is to say, the sea is covered with ice during a shorter period. At the same time the ice is less extensive. Open sea prevails during a greater and still greater part of the year.

The winter place of abode varies in a corresponding manner. The sojourn on the sea ice is shortened. The change takes place especially from the fact that it gradually happens that it is not the entire population which moves out on the ice, but the hunters only, while the families live in the settlements, which, on account of the access to the ice, are situated on the coast, and especially on the headlands. The dwellings consist of permanent winter houses. Snow houses gradually fall into disuse.

When one gets still further away from the Archipelago, along the coasts mentioned above, one comes to regions where the sea ice no longer plays any part as regards hunting. One then comes to the Subarctic Eskimo, whose place of abode throughout the winter is the coast. There the conditions as regards access to the open sea and the possibility of landing in skin boats determine the site of the settlement. Kayak hunting becomes by far the most important occupation throughout the winter. During a part of the summer kayak hunting may also take place, or there may be periods of whale hunting. But the rule is, that these Subarctic Eskimo, like the Arctic, during the summer make journeys into the interior for the purpose of fishing in the rivers (especially for salmon) and of hunting reindeer.

Consequently, the Subarctic Eskimo have the same summer culture as have the Arctic Eskimo, even if it plays a somewhat different rôle among the different groups. As mentioned above, in some groups inland hunting is entirely abandoned.

The following is the table for the Subarctic Eskimo:

	Place of abode	Occupation	Principal Implements	Dwelling
Winter .....	{ The coast.	Hunting in kayaks.	Kayak; harpoon; (umiak).	Earth house.
Summer .....		Inland hunting; Fishing in rivers.	Kayak; lance; Salmon spear; bow and arrow.	Tent.

To this might be added a table showing the conditions among the most extreme Subarctic Eskimo, with whom the summer inland-occupations have ceased entirely. The difference between winter and summer is, then, not so great that we are justified in speaking of a different summer and winter culture. We can only speak of seasonal differences of minor importance.

### **Is the Arctic or the Subarctic form of Culture the older.**

In discussing the Eskimo culture we have classified it according to geographic situation. The question now is whether this classification corresponds with the sequence of development. And next, whether the direction of this development has been from Subarctic to Arctic or the reverse.

As has been shown already the historical sequence of discovery led to the Subarctic culture being regarded as the true and original form. In reality, the problem has never before been set, as it has been here, by distinguishing between Subarctic and Arctic,<sup>1</sup> nor, therefore, has the question regarding the relative antiquity of these two forms been discussed.

H. RINK did not in reality get beyond dealing with the Subarctic form, and for this reason, amongst others, he referred the origin of the Eskimo culture to Alaska. This, however, cannot be reconciled with BOAS's previously mentioned demonstration of the fact that traditions point towards the central regions, where the economic culture is decidedly Arctic. Neither does the theory that the Subarctic culture originated in Alaska agree with the above-mentioned results of the JESUP Expedition.

Consequently, at the very outset we find conditions which favour the belief that the Arctic form of culture must be the older, but we shall now see to what results an investigation on anthropogeographical lines will lead us.

### **The Typical Arctic Winter Occupations.**

**Methods of hunting on Ice.** The real Arctic elements in the winter culture are represented by the methods of hunting on ice, and of these the Maupok method is really the essential method of hunting during the winter, while the Utok method is characteristic of the late spring months, and finally, the annual period of hunting on ice ends late in the spring or early in the summer with hunting at the cracks in the ice or at the open holes. The chief weapon is the harpoon. This weapon is not especially Eskimo in its origin; it is widely distributed, and occurs both in North America and in North Asia outside the Eskimo

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<sup>1</sup> Except in my paper of 1905.

circle. Those used in Utok and Maupok hunting are as a rule thrusting harpoons and fairly simple in form. But in the hunting at the cracks in the ice harpoons must be used which can be thrown. The relationship between the three main methods is as follows: in the central, most Arctic regions, as for instance in the Netchillik and Coronation Gulf districts, the Maupok method is the most important, and it is pursued during the greater part of the sojourn on the sea ice. The Utok method is the next in importance.

But the further one gets away from these regions westwards or eastwards the more the conditions are altered, in so far as there is less and still less occasion for the employment of the Maupok method, while the Utok method and still more the hunting at the cracks in the ice still play an important rôle for a time. Thus, the Utok hunting and the hunting at the cracks in the ice are of importance in Norton Sound, while the Maupok method is only occasionally employed; it has ceased to be of importance even north of Bering Strait. In West Greenland there is also occasion to observe that the Utok hunting and, especially, the hunting at the cracks in the ice play a great rôle even after the Maupok method has ceased to exist as a regular method of procuring a livelihood. In West Greenland the border-land as regards the importance of the Maupok hunting as a means of procuring a livelihood was undoubtedly in old days Umanak Bay and the districts at the head of Disco Bay.

With regard to the hunting at the cracks in the ice — which can, however, scarcely be designated a fixed method of hunting as are the Maupok and the Utok methods, among other reasons, because the Maupok and the Utok methods are only used in hunting seals, while by the more vernal hunting at the cracks in the ice not only the common seals are caught, but also walruses and various species of whales (White Whales and Narwhals) — it should further be stated that the hunting has begun to take the kayak into its service. While with the Maupok and Utok methods the dog sledge only has been used, in the hunting at the ice-cracks the kayak also begins to be employed, both to ferry the hunter across the wide cracks in the ice and to fetch home the booty harpooned at the ice-edge. Thus the hunting at the cracks in the ice forms a transition from hunting on the ice to kayak hunting on the open sea.

Besides the three main methods of hunting on ice mentioned here, it should be remembered that there are other methods, such as the hunting on smooth ice, and especially the *ituarpok* method mentioned under Greenland, which is probably of very ancient date, and of interest as regards the history of the origin of the ice-hunting methods.

The hunting of the musk ox is partly a summer and partly a winter occupation, but plays only a slight and local rôle on account of the musk-ox having been decimated. The winter musk-ox hunting was

undoubtedly of importance originally, but must now be regarded as the relic of an occupation which is of importance only for the small inland tribes on the Barren Grounds, and occasionally for a few other groups. I do not think that musk-ox hunting is now included as a regular factor in the annual economic cycle of any other group than, perhaps, the inhabitants of the Barren Grounds. February and March appear to be the best time for the winter musk-ox hunting<sup>1</sup>. The hunter's equipment consists of the lance, snow shoes, and the dog sledge; and, moreover, the dogs themselves to overtake and stop the animals.

### **The Typical Arctic Summer-occupations.**

**Reindeer hunting** is a summer occupation, and an important link in the annual economic cycle of the Arctic groups. That it becomes of less importance among the Subarctic groups is due in Greenland, as already mentioned, to geographical conditions, while in south-western Alaska the case evidently is that the Eskimo have wedged themselves along the coasts into regions where the inland was occupied by Indians. Reindeer hunting is pursued, partly as a more individual hunting with bow and arrow, and partly by the co-operation of several hunters. The chief methods are the hunting at the fords and the hunting within fences, which fences usually go down to a lake; in both cases the kayak (and the lance) is an indispensable expedient. Both the latter modes of hunting occur everywhere where reindeer hunting is of any importance; they are known from Greenland to Western Alaska.

**Salmon fishing** is a summer occupation which occurs everywhere where the Eskimo have not passed into a purely coastal life. The chief implement is the salmon spear, which is not specially an Eskimo implement; it is used in slightly differing forms among other tribes in North America and in North Asia. Moreover, a small bag-shaped net or a hand-net on a stick is employed; dams are also commonly constructed.

**The Hunting Implements**, which are considered here only because of the rôle they play as regards the "methods of hunting," are only mentioned, in the review of the summer and the winter occupations, in connection with the hunting methods in which they are employed.

### **Means of Conveyance and Appurtenances.**

There is scarcely any feature which so distinctly shows that the Eskimo rank as a hunting people of high development as the fact that they use such highly developed means of conveyance at their huntings.

**The Dog Sledge** is a decidedly Arctic winter contrivance. Its area of distribution extends from Holsteinsborg in Greenland to the mouth of the Kuskoquim River in Alaska. But it is only from Melville Bay

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<sup>1</sup> STEFANSSON, I, pp. 506—507.

and from Baffin Land to Kotzebue Sound that it is the most important and, in the Central Archipelago, the only means of conveyance on the sea, where it is used on the smooth winter ice.

The **Kayak** in its simplest form is a decidedly Arctic summer-contrivance, which, in reality, is distinguished from its mother form, the birch-bark canoe, — which is frequently partly decked over — only by its covering of skin. This simplest form of kayak (cf. *M. o. G.*, Vol. 34, figs. 36—38) has an oblong and not a circular man-hole; it is, however, small and light, so that it may be carried across land, and can be used as a ferry, if two are lashed together side by side. Among the Central Arctic Eskimo it is chiefly used at the reindeer hunting in lakes and at the fords.

As this Arctic river-kayak, away towards the Subarctic regions, gradually develops more and more into a decidedly marine appliance, it is perfected both as regards arrangement and structure. The man-hole is made circular, so that it fits round the hunter's person, and can be made to fit still better by means of the waterproof jacket. Besides the lance, which was the chief weapon of the river-kayak, the sea-kayak is furnished with throwing harpoons with throwing boards.

The throwing board in all probability, for ethnographical reasons, must be regarded as being of American origin. As regards the throwing harpoon, I believe that the highly developed forms with long line and the large bladder are of comparatively late origin. It seems most likely that the throwing harpoons first used by the Eskimo were closely related to the thrusting harpoons, and have had no other floats but the harpoon shaft; at Point Barrow and other places such throwing harpoons without bladder still play a rôle. I think it is doubtful whether the so-called "bladder-dart" is a transitional form as RINK supposed. I am more inclined to believe that the large bladder was borrowed by the Eskimo from the Pacific Asiatics; according to this, then, the bladder was first used with whale hunting, and the Eskimo were the first to convert it into a contrivance for use when hunting seal from a kayak.

I think that the double paddle must be of similar origin. With the exception of the Eskimo, the American tribes do not appear to have used the double-bladed paddle, but only the single-bladed one. On the other hand, the double paddle was an implement rather commonly used in Northern Asia<sup>1</sup>, indeed, its use extended right across to Europe, where double paddles are known, for instance, from bog-finds. Therefore I believe that the Eskimo in the regions about Bering Strait have replaced their original one-bladed paddle by the Asiatic double paddle.

The hunting kayak — equipped with the view of enabling a livelihood to be gained — as developed from the simple river-kayak, oc-

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<sup>1</sup> Cf., among others, MIDDENDORFF, Vol. IV, p. 1356.

curs, then, as a product of accretion, the individual parts of which are partly of Eskimo and American (lance, throwing harpoon, and throwing board; the bird dart must also be included among these), partly of Asiatic origin (the hunting bladder probably and the double paddle).

The Umiak and my theory which regards it as borrowed originally from the Pacific-Asiatics have already been mentioned. As an argument in favour of its southern origin and its distribution from the western Eskimo regions to the eastern, the sails may be mentioned. From the oldest times of "discoveries" sails have been recorded not only from the districts around Bering Strait, but also from Davis Strait, where even Frobisher saw umiaks with sails.

### **Eskimo Dwellings and Garments.**

The dwellings also bear witness to the fact that the Eskimo possess a rich culture. Several of the neighbouring tribes living immediately south of the Eskimo, such as the Nenenot Indians in Labrador, the Tinneh tribes west of Hudson Bay, and the Kutchin tribes in the interior of Alaska have the same type of dwellings both for summer and winter use.

With other North American and North Asiatic peoples, on the other hand, the summer and winter houses differ both in type and in construction. But the Arctic Eskimo have, besides the summer house, two quite different kinds of winter house, both equally useful; viz., the snow house, and the house built of stones, earth, and wood or whales' bones. This is a case parallel to that of the kayak and the umiak.

From a purely anthropogeographical point of view, the earth house among the Arctic Eskimo tends to become the house into which the Eskimo move in the autumn, and in which they live as long as the stores from the autumn hunting last. These earth houses are situated at stated places, usually near the coast, and often on promontories or high points. As a rule new houses are no longer built, the existing ones being used after the necessary repairs have been effected and the roofs renewed. By way of distinguishing it from the earth house the snow house may be defined as the hunting lodge of the winter and spring, without which the wandering life on the sea ice would not be possible.

In the meantime it is difficult to believe that this distinction in the use of the houses is a satisfactory argument for the necessity of two different kinds of winter house coming into existence — or groups of winter houses, as in reality the winter house of earth, stone and wood or bones falls into several types, as will be mentioned later on. It is also seen that the snow house is not used by the Subarctic Eskimo, while, with the most decidedly Arctic Eskimo in the inner parts of the Archipelago, the snow house is now usually the predominant one, and the old ruins of permanent houses are left unused.

In other places, for instance at the mouth of the Mackenzie, at Point Barrow, and at Smith Sound snow houses as well as more solid winter houses are used. The latter, in these three places, are, moreover, seen to represent three different types, which differ from the snow house not only as regards material but also in their structural features, so that it is evident that each of them has a history of development other than that of the snow house.

While the snow houses are everywhere of the same prevailing type, the winter houses in the three places mentioned above, and in some other districts, exhibit such great mutual differences that these cannot be accounted to be simple local variations. In some cases we are obliged to assume outside influences as regards the types of the winter houses. These interesting conditions, which cannot be treated anthropogeographically, will be discussed later on in a supplementary ethnographical chapter (See pp. 187 sqq.).

**The snow house**, on the other hand, must necessarily be regarded as an original Eskimo creation. With no other people do we find anything corresponding to it. But then, it must be remembered, no other region provides so decidedly, as does the region of the Central Archipelago, the geographical conditions for the origin of the snow house, such as the presence of the necessary snow and the absence of other kinds of building materials (especially wood). Immediately the Mackenzie river and Point Barrow are reached, where wood is present in sufficient quantities, other and more spacious and warmer houses occur, and the snow house becomes of less importance.

The geographical distribution of the snow house is from Kotzebue Sound in the west to Melville Bay and Northern Labrador in the east. It plays its greatest rôle in the Archipelago or in the regions where the hunting on the sea ice is of the greatest importance. As the hunting on the ice decreases in importance on getting away from the Archipelago the snow house also disappears.

Consequently, if the snow house is of Eskimo origin, and some, at any rate, of the other winter house types are of foreign origin, yet all the winter-house types have adopted three contrivances which, it is true, may not be regarded as being of Eskimo origin, but as they are necessarily employed in every primitive Arctic house, must therefore be assumed to have been used in the oldest Eskimo houses. These inventions are the passage which by its length and arrangement replaces a tightly shutting house door, the blubber lamp which replaces a fire, and the platform which also plays an important part in connection with the heating of the house<sup>1</sup>.

**The Skin Tent** is the summer dwelling from Greenland and Labrador

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<sup>1</sup> Regarding these technical items the reader is referred to M. o. G., Vol. 34, pp. 311 sqq.



to Alaska. It occurs in somewhat different forms, which, however, may probably be regarded as local variations of one and the same primitive form (cf. pp. 187 sqq.),

The **Eskimo Skin-garment** shows from west to east a certain uniformity. Differences and local peculiarities occur, however. We have the most motley picture from south-western Alaska of the forms of the garments, which, in agreement with RINK, I was inclined to attribute to outside influences — Indian influence, according to RINK's opinion, or influence of Asiatic origin, perhaps of the Pacific-Asiatics. Considered anthropogeographically, this latter assumption appears still to me more probable, but from an ethnographical point of view the opinion has lately been expressed that these diverging forms of garments from south-western Alaska must be very ancient local forms<sup>1</sup>.

A comparative description of the Eskimo skin-garments has recently been given by GUDMUND HATT in his book cited above, in which the Arctic skin-garments both in America and in Eurasia for the first time are made the subject of a fundamental treatment. With regard to the Eskimo, HATT arrives at the conclusion that their garments belong to the oldest complex of forms of skin garments which are known from the Arctic region, and that certain secondary west and east Eskimo peculiarities meet in the central regions, from which he infers that the Eskimo forms have originated from the regions west and north-west of Hudson Bay.

### **Conclusions regarding the Arctic and Subarctic forms of Culture.**

According to the above survey we can divide the Eskimo methods of hunting and the implements they use in connection with their economic life into three main groups.

**First Group.** In this are included such methods and implements as are distributed both among the Arctic and Subarctic Eskimo; for instance, the various methods of reindeer hunting (where there is opportunity for it), the salmon spear, tent, bow and arrow, etc. In other words, they are partly the summer implements of the inland, and partly implements such as the bow and arrow, which are not specially Eskimoic as regards their uses (quite another thing is that the Eskimo in their compound bow have created a variation of the "composite bow."

**Second Group.** This consists of such methods and implements as occur among the Subarctic Eskimo towards the west and the east, but the distribution of which is interrupted in the central regions. Here may be mentioned, for instance, kayak hunting on the open sea and the highly developed hunting kayak, the umiak, bird-dart, etc.

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<sup>1</sup> GUDMUND HATT, p. 108.

**Third Group.** In this are comprised all the things which have a central distribution and disappear gradually as we get away from the central Archipelago. These are especially the typical features of the winter culture or the methods of hunting on ice, the dog sledge, the snow house, etc.

The conditions pertaining to the distribution of the last two groups indicate a central origin. One may even be tempted to consider that the central or third group is the youngest one, which has supplanted the eastern and western forms and forced them asunder outwards.

However, for several reasons which will be apparent from the preceding anthropogeographical investigations this cannot be the case; the central Arctic group must represent the oldest Eskimo culture, as will also be seen from the following arguments:

- 1) The reason why the so-called second group or certain Subarctic implements and methods do not occur in the central regions is due to purely geographical causes, as shown above.
- 2) Moreover, it has been shown that the most typical Subarctic forms are easily explained either as borrowed later from outside sources (for example the umiak) or — like the hunting kayak — as special products of Arctic Eskimo implements developed by adaptation to Subarctic surroundings, and, probably, incited by adoption of elements from outside.
- 3) Among the Central Arctic Eskimo, on the other hand, one meets with all the methods and implements which are peculiar to Eskimo culture (i. e. those not found in other cultures), and they are met with in their most primitive form and usage, while among the western and eastern Subarctic Eskimo they either do not occur (methods of hunting on the ice, the snow house, etc.) or else they have been developed to a special degree (the finest instance of which again is the development of the hunting kayak from the river kayak).
- 4) A further argument for the transition from Arctic to Subarctic Eskimo culture is that such a transition must as a matter of fact have taken place from the Arctic Archipelago and Arctic Northern Greenland to Southern Subarctic Greenland and from the Arctic Archipelago to Labrador. Consequently, as the transition from Arctic to Subarctic culture can take place, and has taken place, in an easterly direction, our supposition that it has also happened along the western line of distribution of the Eskimo culture from the Archipelago to Alaska is strengthened.

Consequently, from the above arguments, we are compelled to assume that the Eskimo culture is oldest in its Arctic form.

The Subarctic Eskimo culture, on the other hand, must be regarded as a form derived from the Arctic Eskimo culture, which has been brought about partly by new-adaptations, when the Eskimo emigrated down into

the Subarctic regions, and partly by the influence and incitation exerted by the cultures with which they there (especially in the districts around Bering Strait) came into contact.

This transition from Arctic to Subarctic Eskimo culture is, anthropogeographically, easily accounted for, while a development in the opposite direction from Subarctic to Arctic would be rather inconceivable, there being in the Subarctic culture an entire absence of any germs from which some of the chief elements in the Arctic winter-culture might be able to spring. Consequently, in the latter case there could be no other explanation than this, that they were cultural borrowings, but no other form of culture is known from which the most Arctic cultural objects and methods of hunting could be conceived to have been adopted.

This negative consideration is also an argument in favour of the Arctic form of culture being the original one.

### **The Home of the Eskimo Culture from an Anthropogeographical point of view.**

The home of Eskimo Culture is consequently synonymous with the home or point of origin of Arctic Eskimo Culture.

The point of origin must necessarily have been an area in which there were the necessary geographical conditions for the existence of the Arctic Eskimo culture. Indeed, very special conditions must have been present in this area for it to have forced the ancient Eskimo, through the demands of adaptation, to modify their original culture in an "Eskimoic" direction.

Even according to this view there can scarcely be any question of other tracts than such as are still inhabited by Eskimo. The north coast of Siberia is excluded by its geographical nature. Its decidedly flat-shore character with low-water areas of great extent, and its barrier-forming masses of pack-ice and lack of extensive fields of winter-ice over deep water behind protective groups of islands, all have prevented Eskimo culture from being able to find, on the whole, means of distribution there.

Then there is the north coast of America. But even that is too large to be taken, as a whole, for the point of origin. For instance, we must leave out the stretch of coast along Alaska's north-west and north coasts, from Kotzebue Sound towards the Mackenzie, because, for similar reasons as exist on the north coast of Asia, it is not inviting for the Eskimo, and only at places, few and far between, from Kotzebue Sound to Point Barrow are small groups of Eskimo met with, who are even mainly dependent on whale-hunting from umiaks of big whales — thus borrowing from more southerly regions in their manner of obtaining a livelihood.

We next come to the stretch of coast on both sides of the mouth and the delta of the Mackenzie. This place, where a large river abounding in fish connects the inland regions with the sea, might appear to be well suited to participate in the development of Eskimo culture. But, nevertheless, I do not think that this has been the case. Firstly, the district with its abundance of fresh water in the delta and with its abundance of drift-wood could permit of what we may term an "Indian" mode of life; it is impossible to believe that the district in question could force people having another mode of life to make radical and fundamental changes in it. Secondly, these Eskimo at the mouth of the Mackenzie did not in any great degree use the abundant drift-wood for fuel in winter, but depended upon oil lamps, which shows that their ancestors had migrated from regions where drift-wood was not abundant. It must, then, be assumed that the Mackenzie Eskimo have migrated along the coast from Coronation Gulf or adjacent parts.

Then we have left only the Barren Grounds Peninsula, between the Arctic Ocean and Hudson Bay, and the Arctic Archipelago situated in front of the Arctic Ocean. As regards the regions more easterly than Hudson Bay, these are out of the question for both geographical and ethnographical reasons.

Consequently, these considerations lead us to the region of the Arctic Archipelago, where we find the Arctic Economic Culture in its most typical form. Hence it appears that we must also assume that the Arctic Archipelago is the region where the Eskimo culture originated.

We must suppose, then, that for some reason or other the ancient Eskimo moved across the inland regions between Hudson Bay and the Lower Mackenzie River to the coast of the Arctic Ocean and the southern parts of the Archipelago, whereby Coronation Gulf and the Netchillik districts are especially meant; and that the Eskimo culture was gradually modified as an adaptation to the peculiar natural conditions existing in the Archipelago, of these natural conditions the most important features to be mentioned are the ice-covering, the aquatic mammals, the wanderings of the reindeer herds and the absence of wood. To these must necessarily be added, in connection with the times we are here considering, the musk ox; originally, it must have been of great importance.

It is these natural conditions in the Archipelago or, to put it more exactly, in the coast and sea regions between the mainland and the islands which have been able to force a slow hunting people such as the ancient Eskimo must have been to undertake so thorough a cultural change as that which the modification of the Eskimo culture must necessarily have required.

## From Continental Culture to Coast Culture.

The Eskimo are always described as a coast people, and their culture as a well-marked coast culture. This is of course true as regards the Subarctic Eskimo; but, properly speaking, it does not in reality apply to the Arctic Eskimo.

It is true that, in a strictly geographical sense, the Arctic Eskimo are inhabitants of the coast. But in reality their culture is not adapted to a coast-life in the general meaning of the term. This is at once seen by looking at the table for the Summer and Winter cultures of the decidedly Arctic Eskimo (p. 157). Normally, the summer is spent inland, and they do not move to the coast until the sea is frozen over.

The typical mode of life of the Arctic Eskimo consists, then, in moving to and fro between the interior and the sea-ice, while the coast and the open sea play so insignificant a rôle for them that they must be described as quite continental in their mode of living<sup>1</sup>.

This continentality is interestingly illustrated by the fact that the testaceous and crustaceous animals of the coast, which are otherwise so important as reserve food for inhabitants of the coast with a hunting culture, play no rôle whatever for the Arctic Eskimo. There is hardly any other explanation for this than that the latter descended, or at any rate have inherited their mode of living and way of thinking, from inhabitants of the inland who have moved direct out to the Arctic sea coast, where they have developed this mode of living with its continental characteristics. As regards the observation mentioned above, I shall cite STEFANSSON<sup>2</sup>: "No sort of shell fish ever seems to have been used as food by the Eskimo, north of the mouth of the Yukon River, at least, although clams and shrimps abound in certain places, and their use is just now being introduced by white men."

It is seen, then, that the Eskimo culture in its older, original form — viz. the Arctic form — has still preserved its continental character. The modification of the Eskimo culture into a real coast culture takes place, then, only gradually, as it gets away from the Arctic Archipelago and becomes Subarctic.

## A Palæeskimo and a Neoeskimo Layer of Culture.

Herewith we finish the anthropogeographical investigation, in which we have studied the economic culture of the various Eskimo groups such as it has developed in various places on the basis of the geographical adaptation.

It appears, however, that the Eskimo culture ought not to be regarded exclusively as a result of the geographical adaptation. Influence

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<sup>1</sup> Cf. M. o. G., Vol. 34, p. 402.

<sup>2</sup> STEFANSSON, II, pp. 450—451.

and borrowings from without also have conduced to the forming of the Eskimo culture which we now know, or which, more correctly, defined itself when the Europeans first established a connection with the different divisions of the Eskimo. Yet the adaptation is the primary factor — the influence from without being a secondary factor in the history of the development.

We have arrived at the result that the Eskimo culture is oldest in its Arctic form, and that it has arisen in the Arctic Archipelago as a product of adaptation.

From the Archipelago the Arctic Eskimo culture spread east and west as far as the ice-conditions allowed. Towards the west it reached the districts at Bering Strait, where it came under foreign influence, especially under the so-called Pacific-Asiatic influence. By this we understand influence along the coast route from some different Asiatic Pacific peoples. The conception must be understood collectively, because there is so much that is unknown and unravelled as regards ethnology and history of these peoples; but there can hardly be any doubt that it is in this direction we must search for the most important source of the cultural influence on the Eskimo before they met the Europeans.

It so happened that the foreign influence was not so much a re-fashioning of the Eskimo culture which was created in the Archipelago as a contribution towards a further development in established directions. Some new implements were, of course, adopted, but that contact with a higher and richer technique has no doubt brought about improvements of existing forms is of just as much significance. Thus not only was the Arctic form of the Eskimo culture improved, but simultaneously the Eskimo culture expanded and advanced further in a southern direction, whereby the Subarctic form was first fashioned and developed.

The place for this influence, or rather for these various influences, amongst which the so-called Pacific-Asiatic is the most important, was the west coast of Alaska or the districts round Bering Strait, which we can best express by alluding to the most essentially geographic momentum viz., the approximation to Asia.

With this demonstration of the Archipelago and Bering Strait being the two geographical focuses in the history of development of the Eskimo culture — the Archipelago as important for the adaptation and Bering Strait for the influence from without — the investigation at issue essentially ends. If one would make these results more intense one must do so by employment of other scientific methods, ethnographic, archæologic, etc.

In the following, I myself shall endeavour, however, to throw a little more light on the process of development of the Eskimo culture by firstly investigating whether one can form any idea of the pre-Eskimo mother culture from which the oldest Arctic Eskimo culture

has issued; I will call this last mentioned oldest Arctic Eskimo culture the Palæeskimo culture, and the older Arctic Eskimo people Palæeskimo. A further explanation of this name as being analogous with Palæasiatic and the like is hardly necessary.

Nextly I will subject such a conspicuous object of culture as the house to an ethnographic investigation, whereby, amongst other things, there will be occasion to try and decide firstly which forms are originally Palæeskimo, brought along from the home of adaptation in the Archipelago, and secondly which have first arisen in the domain of influence — the area of acculturation — at Bering Strait. I will call all these latter forms, not only of the house but also of other cultural objects, received here or developed by incitation from foreign influence Neoeskimo, and the whole of the younger Eskimo layer which carries this hybrid culture Neoeskimo.

The transition from Palæeskimo culture to Neoeskimo culture has taken place in any particular spot at the moment when the tide of culture coming from the regions around Bering Strait in some way or other reached the place in question, having fructified and enriched the present Palæeskimo culture. The Subarctic culture, both towards west and east, entirely belongs to the Neoeskimo layer.

## The Economic Cultures Adjoining the Eskimo Culture.

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Thus, the origin of the Eskimo culture is a somewhat intricate matter. In the Archipelago, by adaptation to the special conditions of nature here, the Palæeskimo culture first came into being, and then spread north, east and west in the Archipelago and along the north coast of North America. In the regions around Bering Strait and over an area which must not be considered in a too restricted sense, the Palæeskimo culture has been exposed to influence from without, and the Eskimo culture, of which the various nuances have been dealt with here, gradually emanated.

We must now propound two questions: 1) What was the character of the economic culture from which the Palæeskimo culture originated, and 2) what forms of culture in the district round Bering Strait can have influenced the Eskimo culture?

For the solution of both questions is demanded a consideration of the forms of culture contiguous to the domain of the Eskimo, or, at any rate, that which is found in the vicinity of this, and from which there is a possibility of influence.

I prefer to begin with America, because there, we have more simple and comparatively less compounded conditions than in Asia. We need pay little regard to the civilizations, based on plant-cultivation, which we find in the south-eastern and southern parts of North America, even if an indirect influence and an interchange of culture is not quite out of the question. We must go north of the Canadian lakes before we find those forms of culture which can be considered to represent conditions similar to those with the mother-culture of the Palæeskimo. In these northern districts we can, then, pick out three forms of economic culture, which I will call 1) the Forest Indian form, 2) the Prairie Indian form, and 3) the North-west Indian form.

The three forms, which are associated with the three pronounced geographical types of landscape, the forest, the prairie, and the west coast so abounding in inlets, comprise, as it were, three belts from south to north. In its distinctive form the prairie extends no further than the region of the Saskatchewan River, but smaller parts of prairie occur



amidst forest regions as far as 60° N. lat. Around Peace River, even larger regions of prairie are found, and the bison, the most important form of animal life on the prairie and the Prairie Indian's most important game, only reached its northern boundary at, or a little north of, the Great Slave Lake<sup>1</sup>.

The North-west Indian culture is by considerable distance and by the huge range of the Cordilleras separated from the interior districts where we must assume that the pre-Eskimo mother-culture must have had its home. Next, the North-west Indian culture is so peculiarly developed and, no doubt, so influenced from Asia at a comparatively recent date, that for these reasons we cannot expect that a study of this culture will give us the basis of the Palæeskimo culture. At a later stage the North-west Indians may have influenced the Eskimo in Alaska, but this influence has hardly been of encroaching significance in any direction.

If we will seek to understand the basis of the Palæeskimo culture we must investigate the economic culture of the Northern Prairie and Forest individuals. But before that, we must look at the forms and groups of economic culture which in Asia may be assumed to have influenced the Eskimo culture in its later Neoeskimo stage. When, for the sake of a general view, we number the mentioned American forms of culture from 1—3, and continue in Asia, we get the following:

4) The Siberian Reindeer Nomadism, which is a form of culture of a distinctly continental character which only relatively late penetrated to Bering Strait; its influence on the Eskimo culture has no doubt been very slight.

5) The Siberian Continental Hunting Culture. The reindeer nomadism, however, forms only a comparatively thin layer over another and older form of culture, which in reality still exists, supported partly by certain tribes and partly by the real nomads, who, besides their reindeer-breeding, carry on hunting and fishing in the old way. This hunting culture, which is associated with the forests and rivers in Siberia, corresponds, however, rather exactly with the above-mentioned culture of the northern Forest Indians. A more exact demonstration of this would, however, in this connection, lead too far, but most of the under-mentioned hunting and fishing methods from the regions west of Hudson Bay are refound in Siberia. The same holds good of the hunting implements, and vehicular contrivances such as snow shoes and birch-bark canoes; indeed, a sledge of the Canadian toboggan type seems even in the time of MARCO POLO<sup>2</sup> to have been in use in North-eastern Siberia.

There is hardly any doubt that these and other congruities represent a reminiscence of the ancient distribution of culture, and perhaps simul-

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<sup>1</sup> Cf. HORNADAY.

<sup>2</sup> Cf. MARCO POLO's third book, chapter 44.

taneously the distribution of people from Asia to North America. And this is the Palæasiatic-American connection which JOCHELSON speaks about when taking in consideration the distribution of the forms of the houses.

In Asia, however, the original conditions have been greatly changed by the waves of people and the streams of culture which have poured northwards; but even with these alterations the inland culture of the Asiatic continent has had no particular significance for the Eskimo culture at any of its stages.

6) The Pacific-Asiatic Influence. On the coast of the Pacific the Palæasiatics have been able to hold out. Here the nomads have not been able to expel or denationalize them. On the other hand their culture has been subjected to such a strong, direct influence from the south, especially from Japan, that the original conditions are greatly altered. When reading STELLER's description of the old Kamchadales, for example, one gets a strong impression of their influence from the south. There is no doubt that they have been closely in touch with Japanese navigation, even if this, in the time of BERING and STELLER, was no longer the case, and was only traced through tradition and the possession of culture, inasmuch as BERING and STELLER arrived at these shores about one hundred years after Japanese navigation had been suppressed by the Shogunate.

As emphasized before, the Pacific Asiatics have, from a purely geographical point of view, therefore, the common characteristic that they live along the Pacific Coast, but they do not constitute any source for a homogeneous influence on the Eskimo culture. We must rather comprehend the conditions as expressing a route, in that the Pacific Asiatics have been nearer to elements of culture of different origin and, on account of navigation, the communication between south and north has been considerably shorter and easier along the Pacific Coast than through the interior of Siberia.

In reality the Pacific Asiatics must have been in a position to carry elements of culture having very diverse origin. The unravelling of this would demand thorough ethnographical studies, for which we scarcely possess the material at present.

We must therefore be content with a purely temporary analysis of those different elements of culture which the Eskimo in the regions around Bering Strait may have received along this Pacific Asiatic way of influence. They fall principally within 3 groups, which will here be made the subject of a temporary classification.

- a. Elements of culture which may be described Palæasiatic in their origin.
- b. Elements of culture from more southern cultures which have been adopted by the Palæasiatics, or by some of these, and through them transmitted as far north as the Eskimo. Within this group

there may be a question of various continental Asiatic elements: Korean, Japanese, indeed even Malayan, and, possibly, still other elements.

- c. Direct influence from East Asiatic, not Palæasiatic, navigators who have reached as far as the Eskimo, along the Pacific Coast. In this connection special attention must be paid to the Japanese, and to the period when they were great navigators, before the beginning of the 17th century.

There might be a question of yet a 7th source for the influence on the Eskimo, viz., the old Norse population in the eastern and western districts of South-west Greenland. There has been an inclination to point to Norse influence, for instance, in the structure of the Eskimo house in South Greenland and in the Eskimo employment of iron etc.; but such influence has not been conclusively proved, and whatever the circumstances may be, a Scandinavian influence in South Greenland can never have had, however, any decisive influence whatever on the fundamental shaping of the Eskimo culture.

In the following lines we shall further consider the economic culture of the Prairie Indians, and still more so, of the northern Forest Indians, inasmuch as, as has been suggested, it is amongst these two groups in particular that one may expect to find represented those conditions of culture which have formed the basis for the Eskimo culture.

**The Economic Culture of the Prairie Indians.** The economic culture which has developed on the prairie cannot entirely represent the direct mother-culture of the Palæeskimo culture. But a consideration of it will tend, however, to throw light upon pre-Eskimo conditions. This is especially true because the prairie and tundra, regarded anthropogeographically, present very similar conditions. The Eskimo must have passed the tundra, and have essentially lived there before they came to the shores of the Arctic. The chief means of subsistence with the prairie tribes was bison hunting, but on the tundra the bison herds were replaced by the musk ox and enormous herds of reindeer.

It is true that the climate of the tundra is considerably colder than that of the prairie, which accounts, also, for the difference in the vegetation; but the northern parts of the prairie still have a very cold winter together with a comparatively warm, but short, summer. On the prairie, therefore, we also find a cultural dimorphism corresponding with this. This first shows itself in the conditions of their dwellings. The typical summer dwelling of the prairie tribes is the conical skin-tent of the "Tipi" form. It evidently originates from the dome-tent, but it is a form<sup>1</sup> which came into use even before the time of the Europeans, even if, with the introduction of the horse, it seems to have been more generally distributed. As a winter dwelling, either this form of tent or

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<sup>1</sup> SARFERT, pp. 22 sqq.

a round earth house was used, which is known especially from tribes belonging to the Sioux Indians, who lived round the Missouri River. It is especially known from the Mandans through the descriptions<sup>1</sup> of CATLIN and the PRINCE OF WIED<sup>2</sup>. The house had a frame of wood and an outer covering of turf.

As regards the economic culture we naturally do not consider recent times — since the introduction of the horse — and special regard is paid to the most northern regions. Here the distinction between the occupations of the summer and the winter are most pronounced. If, when speaking about hunting and fishing as two different means of livelihood, hunting was by far the most important on the prairie on account of the bison and on account of the comparative scarcity of water on the prairie, fishing was more to the fore in the forest.

In the winter the bison was hunted on snow shoes, with lances or with a bow and arrows, and even the toboggan was used with this hunting. When, in the winter, the snow had covered the prairie with a firm layer, the Prairie Indian on his light snow sledge, which was put-to with 3 dogs; could drive straight into the herd of bisons and slay the beasts with his arrow. In the summer different kinds of underhand hunting were employed, when the hunter tried to steal upon the animals; but the method of hunting which gave the best return, however, consisted in driving the herds of bison in between two convergent rows of poles, which ended in a narrow fence, where the animals could be slain fairly easily<sup>3</sup>; thus it is the same method which we know from the Eskimo reindeer hunting.

**The Economic Culture of the Northern Forest Indians.** By the Northern-Forest Indians I understand the original inhabitants of the areas most essentially covered with forest, which in North America lay north of the St. Lawrence and the Canadian lakes, or more correctly, north of the old frontier for maize cultivation.

Towards the south-west and west this northern forest area was bounded by the prairie and the Cordilleras, which occupy the whole of West Canada and South Alaska. Towards the north the forest area is bounded by the limit of the forest, which on the west coast of Hudson Bay is at about 60° N. lat., and then runs east of Great Slave Lake to Great Bear Lake. Finally a belt of forest goes along the Mackenzie River northwards to the delta of the river, and a similar belt of forest runs along the Yukon River as far as the delta of this river.

Apart from Labrador one can divide this area of forest into a larger Hudson part, which comprises the area from Hudson Bay to Mackenzie

<sup>1</sup> As regards my former, but now abandoned, supposition that this house was a direct precursor of the Mackenzie house, I refer to my preliminary paper on the subject and to the following section about types of Eskimo houses.

<sup>2</sup> WIED, pp. 285—86.

<sup>3</sup> UMFREVILLE, pp. 114 sqq.

River, and a smaller Alaskan part which comprises the considerably more restricted forest districts in the valley and side valleys of the Yukon River.

The forest vegetation is the only hitherto mentioned geographically characteristic feature. Meanwhile there are others of great anthropogeographical importance. Firstly the great abundance of fresh water. This especially applies to the Hudson part, the old granite and gneiss surface of which has been formed by glaciers and presents itself as "the land of a thousand lakes," a character presented also by Finland. Lastly it must be remembered that the forest is of northern pine and birch, and that it does not everywhere occur in overpowering luxuriance. It has already been mentioned that there is one area which, with alternate stretches of forest and prairie, forms the transition from prairie to forest. In a corresponding manner the boundary of the tundra is naturally not sharp, as the outer belts of forest are already, from time to time, interrupted by tracts showing the tundra character. As regards climate these regions are characterized by their distinctively continental climate, with a long and severe winter and a short and comparatively warm summer. Almost the entire region lies north of the January isotherm, — 20 C., which runs from Hamilton Inlet on the coast of Labrador in a curve almost mid-way between Hudson Bay and the Canadian Lakes, southwest round Lake Winnipeg, west of the Upper Mackenzie and south of the Yukon River. On comparing this with the fact that the same isotherm in Greenland reaches to about Disco Island, one understands that the here mentioned regions are during the winter just as cold as several Eskimo districts, and have almost as long a winter.

A circumstance connected with this, which is of the greatest anthropogeographical importance to the inhabitants, is the protracted covering of lakes and rivers with ice. If regarded from the point of intercourse the use of the sledge (toboggan) is contingent upon this covering of ice together with the covering of snow. In the economic culture, the rôle played by the covering of ice is that, through this, some fishing methods through holes in the ice occur.

The stock of fish in rivers and lakes is very abundant. All judges of the land agree in emphasizing this. The most important fish is the "white-fish" (a species of salmon, *Coregonus albus*), which, on account of its abundance and importance to the Algonquin Indians southwest of Hudson Bay, has even got the surname "the reindeer of the waters." In addition, sturgeon and pike are mentioned, as also *Salmo Mackenzii*<sup>1</sup>, which is only found in the affluxes to the Arctic Sea from the Mackenzie River and eastwards; the Tinnéh tribes call it *Si*, which is said to mean "the unknown," which reappears in the French Canadian term for it, *L'inconnu*.

Nowadays the most important hunting animals are the stags. The

<sup>1</sup> Cf. SABINE.

two most important kinds of stag in these regions are the elk and the reindeer. The American elk (moose; the French Canadian *orignal*) lives in quite a similar manner as the European elk, in that it keeps to the forest districts rich in lakes and rivers, and avoids prairies as well as tundra areas. The reindeer is also found in the forest districts, where it roams singly or in small herds. These forest reindeer are, however, of slight importance as compared with the huge masses of the tundra reindeer, which in the summer overrun the tundra, while in the winter they migrate southwards to the forest-edge, or to protected places within the tundra. Also small game, such as hares and web-footed birds are of anthropogeographical importance. If we go back in years, we are obliged to assume that the bison south of Great Bear Lake and the musk ox as far as the edge of the tundra must once have played a rôle as hunting animals to the Forest Indians also.

The population in the mentioned forest belt is, in an ethnographic respect, not very heterogeneous, inasmuch as here only two groups of tribes are found, the Algonquins and the Tinnéh people. Algonquin tribes occupy the interior of Labrador, and also the regions south and south-west of Hudson Bay as far as Churchill River. Further north, Tinnéh tribes (Athabascans) are predominant both in the Hudson and the Alaskan parts of the forest territory.

It is not necessary, here, in this connection, to enter further into detail about the individual small groups or tribes, although an attempt to apportion the tribes to the geographical differentiation of the country would not be without interest. Meanwhile it must be emphasized, that these so-called Forest Indians also extend somewhat on the tundra. This applies to the whole stretch from Hudson Bay to Western Alaska. On the north-eastern Barren Grounds the boundary of the Eskimo's hunting fields runs south of Dubaunt Lake, and slightly north of Aylmer Lake.

In my work of 1905 I made an attempt to localize the groups in relation to hunting districts and groups of lakes, and on the whole I there gave a more copious description of the anthropogeography of these regions in question. Finally, I there quoted a series of arguments which showed that the Tinnéh people could not originally have populated the Hudson lowland, but must have come from the west across the mountains. Probably those authors are right who assume that their source of origin lies in British Columbia, and that along the vast valleys of Fraser River and Columbia River they have made their way towards the east. As far as I know SCHOOLCRAFT<sup>1</sup> was the first exponent of this conception. Whatsoever the conditions of the source of origin may prove to be, it is a fact that the Tinnéh people have expanded in a more restricted territory. They now inhabit such large areas that it is impossible that they always can have possessed these.

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<sup>1</sup> SCHOOLCRAFT, Vol. II, p. 27.

What, here, we have to investigate is, however, the economic culture in the forest regions, and especially so in the Hudson territory. It will not be possible to give a description of the annual economic cycle, partly on account of the lack of information, and partly because to do so one must distinguish between tribes which, for preference, live at the good fishing places, and tribes which, for preference, hunt on the tundra and at the edges of the forest regions, and tribes which live in districts in which all big game has been hunted out, for which reason they must maintain life by catching small game (hares). Yet fishing plays an important rôle for all of them; it is their resource for sustaining life when the other, more favourite, means of livelihood fail.

We must therefore content ourselves with a distinction between the occupations in winter and summer, and between the various economic apparatuses for use in winter and summer. Firstly as regards the dwelling, the Indians of the territory deviate from the Prairie Indians and from the Eskimo in that they inhabit the same kind of tent all the year round, viz., a cupolar tent of the same kind as that also employed by the southern Forest Indians, and best known from the Algonquins under the name of wigwam. This word is, however, really only the designation of the tent covered with birch-bark. The frame work consists of light, pliable tree-trunks of 2—3 metres in length, the lower ends of which are driven into the ground, while the upper ends are tied together in such a way as to form a dome. If the poles are sufficiently long and pliable, they can simply be bent into a semicircle, when both ends can be driven into the ground. In the summer the tent is only covered with bark, but in the winter with snow also. A hole is dug in the snow, about one metre deep, or as deep as the firm ground, on which the tent is pitched<sup>1</sup>. With the Kutchin-Indians in Alaska the tent has become slightly altered in form, in that the ground plan has become somewhat elliptical.

As regards contrivances for transportation there are two groups, one for summer and one for winter. The summer means of conveyance is the well known birch-bark canoe, which is so small and light that it can be carried over land from stream to stream, and yet so large that it can hold two men at least; it is propelled with a single bladed paddle, and the authors describe the strength and ease with which the Indians handle their boats. The snow shoes and the toboggan are the winter means of conveyance. Snow shoes are used by both sexes and are — to which even MASON<sup>2</sup> draws attention — an indispensable contrivance when hunting and travelling in the most northern lands. On the other hand, in the forest district the toboggan seems to have become a woman's instrument, the use of which was not greatly developed; it was drawn by women, who, however, when dogs were at hand, inspanned a couple

<sup>1</sup> SCHOOLCRAFT, p. 19 sqq., where there are also references to literature.

<sup>2</sup> MASON, p. 381. On various forms of snow shoes see KOHL, Vol. I, pp. 154—59.

to help them<sup>1</sup>. The man's only task was to make the toboggan, and if he was too lazy to do so, the woman had to put up with carrying the luggage on her back, or — as HEARNE<sup>2</sup> reports — with wrapping it up in skin, and pulling it along the ground.

Canoe, snow shoes, and toboggan are contrivances which, on account of their exact adjustment to the conditions of nature, have been able to maintain themselves even to this day. On the other hand most of the real hunting-implements disappeared fairly early, in the same ratio as trading with the Hudson Bay Co. advanced, but even in 1789 MACKENZIE found bows and arrows, as also the lances for hunting big game, in use along the Mackenzie River. HEARNE likewise mentions and illustrates a spear of this kind used for "killing reindeer in the water."

Other implements which ought to be mentioned are the two or three-pronged fish-spear; another fish-spear which was used both for throwing and thrusting, being provided with a line which was held fast in the hand or tied to the stern of the canoe; harpoon-forms where the point is released with the thrust; harpoon-arrows which are shot with a bow; a club, which, according to Mackenzie, was of reindeer antler and  $\frac{1}{2}$  metre in length; and an ice pick which was used for making holes in the ice, and was for all the northern Indian tribes an indispensable instrument, as their fishing through holes in the ice during the winter was dependent on it. Nowadays the natives buy iron picks or axes, and the original form is known only from one single report, through the legends, and from some archæological discoveries. It consisted of a single branch from the antler of the elk or reindeer, which was fastened to a shaft of wood<sup>3</sup> 1—1 $\frac{1}{2}$  m. in length.

For the sake of completeness it must be mentioned, moreover, that the Indians here mentioned knew fishing nets, which they made of willow bast. Without doubt, however, it is a late acquisition of culture. Besides large nets, the bag-nets on a frame-work fastened to a long stick, and well known from the Eskimo, were employed. Fish-hooks were also known. Even HEARNE<sup>4</sup> observed fishing with hooks through holes in the ice; and MACKENZIE<sup>5</sup> saw fishing-lines made from the sinews of animals, and hooks of wood, horn and bone. The personal outfit was not complete without a knife. MACKENZIE observed at the Mackenzie River that the Indians were in the habit of carrying a knife in a sheath which hung from the neck<sup>6</sup>.

<sup>1</sup> MACKENZIE, p. 120; FRANKLIN, I, pp. 160—61; RICHARDSON, I, Vol. II, pp. 15—16, 92—95; HENRY, p. 301.

<sup>2</sup> HEARNE, I, p. 349.

<sup>3</sup> SCHOOLCRAFT, Vol. I, pp. 88—89; HEARNE, I, p. 116; KING, p. 152.

<sup>4</sup> HEARNE, I, p. 45.

<sup>5</sup> MACKENZIE, p. 37.

<sup>6</sup> I cannot refrain from pointing to what a degree the old North Indian copper knives, for which the material was native copper procured from copper



Some of the implements mentioned were only used during the winter, and on the ice; but most of them were used during both winter and summer, although with somewhat different methods of hunting. Some of the methods of procuring a livelihood were so easy that they could be carried out by women, children and old men, but they are not of particular interest here. Among these, for example, were the catching of hares and other small mammals in snares and traps, and also certain methods of fishing. To these also belongs the fishing method well known from the Eskimo, which consisted in blocking up a stream with an arrangement of stones or with a row of stakes, which were placed so close together that salmon and sturgeon could only pass through a single opening when on their way to their spawning ground. Here the fisherman placed himself with his fishing-spear or bag-net, or put a net or a kind of trap platted from willow branches in front of the opening.

On the other hand it is the man's work to take charge of the hunting of big game, as also the more difficult task of fishing from the canoe. Each little fishing canoe holds two men; at the stern a paddler, and in the stem a fisherman who stands up spying for the fish, which, as quick as lightening, he strikes with his fishing spear or catches with his bag-net. On lakes and quiet rivers the fishing spear is the most common implement, and by signs and signals the fisherman causes the canoe to be guided in such a way as will enable him to strike the fish with his spear. At night the fishing is carried out in the same way by the light from a torch, which is placed on a pole above the fisherman's head<sup>1</sup>.

One can get a better idea of this kind of fishing by reading a description by H. Y. HIND<sup>2</sup> who has travelled amongst Ojibways and Algonquin Labrador tribes where he has had opportunity to observe fishing in quiet waters by torchlight as well as fishing at the foot of rapids; I shall be content, however, to refer to HIND's descriptions.

It was particularly with the fishing of sturgeon that a fishing spear with a line was used, which line was held in the hand or was tied to the stem of the canoe. When the sturgeon was struck it fled through the water dragging the canoe with it, until it became exhausted.<sup>3</sup> BIGSBY<sup>4</sup> relates that on one journey up a river he saw a long upright spear rushing through the water, and the next moment saw a canoe dart round a curve, with an Ojibway Indian standing erect in the stem, and another

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pits, used both by Eskimo and Indians, at the most northern Rapid of the Coppermine River, Bloody Fall, call to mind forms from the European-Asiatic bronze age; cf. C. WHITNEY's figures on p. 264.

<sup>1</sup> SCHOOLCRAFT, Vol. II, p. 52, Vol. VI, plate 8; HENRY, p. 61; MC. KENNEY, p. 193; KANE, p. 31; KOHL, Vol. II, pp. 144-45, 150.

<sup>2</sup> HIND, Vol. II, pp. 98 sqq.

<sup>3</sup> FARAUD, pp. 310-11.

<sup>4</sup> BIGSBY, p. 258.

behind, who paddled. A large fish — a sturgeon, as BIGSBY assumed — had torn away with the spear attached to it.

CHARLEVOIX<sup>1</sup> gives the following description of sturgeon fishing, without, however, referring further to the "throwing spear" which he mentions. "Two men are in the canoe, each at his own end; the one behind steers, the other stands up and has in his hand a throwing spear to which is tied a long line, the other end of which is fastened to the canoe. The moment he sights a sturgeon at a suitable distance he hurls his throwing spear, and tries to strike between the laminæ of the bones. If the fish is hit it rushes away, dragging the canoe after it at a rather rapid pace, but when it has swum about 150 steps it dies, when the line is hauled in and the spoil secured."

Of great interest is a winter method of fishing used on the ice, which, when employed with seals, is known from Greenland as the *ituarpok* method. After an interval of a century it has been described by HENRY<sup>2</sup> and KOHL<sup>3</sup>, who observed it in use with the Ojibways, and SCHOOLCRAFT says that it is one of the most common methods in the northern districts. Holes of 45—60 cm. in diameter are chopped in the ice, and over them a small scaffolding of branches is raised which is covered with skin, so that the light is entirely excluded. When the fisherman lies down and puts his head into the bower with his face just above the hole he can distinguish to a great depth everything which takes place in the still, crystal-clear water and, with a fish-spear which according to KOHL may have a length of 11—12 metres, can strike any fish of which he catches a glimpse. Frequently he makes use of a bait to allure the fishes. KOHL relates, further, that where there is a current in the sea water, as for example where a river debouches, a furrow 8—9 m. long is chopped in the ice from the hole and to the current, through which an assistant with the aid of a long line supports and steers the long fish spear according to the signals of the fisherman. With this method of fishing on the ice the harpoon does not seem to have been employed. Probably the method has only been used in places where one could see the bottom. Harpoons, however, have been in general use in open water, and this has probably also been the case when catching large sturgeon and salmon by fishing through holes in the ice, a method so generally carried on.

When the hunting of big game is mentioned, it must be remembered, as previously stated, that on the one side there is a transition region towards the prairie, and that, on the other side, the Indians advance on the tundra to some extent. This is reflected in the methods of hunting. The hunting of elk in the pinewoods does not greatly differ

<sup>1</sup> CHARLEVOIX, I, Vol. 3, p. 154.

<sup>2</sup> HENRY, p. 66.

<sup>3</sup> KOHL, Vol. II, pp. 147—49.

from the forest hunting in the east of the United States of America, where the ability to follow up the trail of the game is the most important demand made on the hunter. Consequently he has to have the most exact knowledge of the mode of living, favourite food, trail, and general movements of the game, when, by the aid of numerous precautions and boundless patience he ought to be able to approach his victim. A further description of these modes of procedure is not wanted here, partly because they are well known from elsewhere, and partly because they cannot be of great interest in the connection in question. It will only be mentioned that in the pine forests the hunter makes extensive use of the birch-bark canoe, which he partly uses at night to get within gunshot of the drinking animals<sup>1</sup>, and partly uses to hunt the swimming elks. By preference these live in lake districts with many islets, and, besides, generally have fixed tracks, along which they move and cross the rivers. In such places the hunter lies in hiding with his canoe, in order to pursue the swimming animal, which he can easily overtake and kill. This method of hunting is mentioned by FARAUD<sup>2</sup> and HEARNE<sup>3</sup> from the Hudson forest-lands, and by WHYMPER<sup>4</sup> from the Yukon Valley.

The protracted covering of snow during winter, as also the ice, must naturally also cause peculiarity in the methods of hunting. When the snow lies so deep that the elks can only with difficulty work their way along, the hunter who is on snow shoes runs down his animal, and drives it in front of him to a river, where he then kills it, in order to avoid the difficult transport through the forest<sup>5</sup>.

It is common with the Forest Indians and the Tundra Indians as also with the Central Eskimo to follow the trail in the snow, and steal upon the victim by putting on the skin of a deer and imitating its movements<sup>6</sup>.

On the tundra, again, the hunting is different from what it is in the forest, in that, here, it is not a question of a single animal, but of reindeer living in herds. When on their wanderings in spring and autumn the herds move to the sea coast or the tundra, and back to more southern regions, they have some fixed tracks which they generally follow, and certain places where they cross the rivers. At these places, which the Indians know so well, the latter lie in hiding with their canoes. The mode of procedure is described by R. KING<sup>7</sup>: "The natives, seated in their canoes, remain in ambush until the first two or three animals have

<sup>1</sup> SCHOOLCRAFT, Vol. II, p. 53 sqq.

<sup>2</sup> FARAUD, pp. 305—306.

<sup>3</sup> HEARNE, I, p. 289.

<sup>4</sup> WHYMPER, I, pp. 214—215.

<sup>5</sup> W. PIKE, II, p. 95.

<sup>6</sup> FRANKLIN, I, p. 244; FARAUD, pp. 304—306; KLUTSCHAK.

<sup>7</sup> R. KING, Vol. I, pp. 254—55.

landed on the opposite shore; when they dart forward from all quarters, and spear them in vast numbers, fully aware that the deer, like a flock of sheep, will follow their guides notwithstanding the intrusion."

In the spring of 1834, BACK and KING at Back's River (64°40' N. lat., 108° W. long.) met a group of Red Indians who here were accustomed to lie in wait for the reindeer herds. That year, however, the reindeer had come before their pursuers, and the Indians found themselves obliged to feed on the flesh of the musk ox, which is not relished by them, as it is by the Eskimo.

In the early summer, as soon as the reindeer have arrived on the tundra, the Indians prosecute a lively killing of the new-born calves, the skin of which is much sought after for underclothing. In the course of the summer a battue is arranged from time to time, inasmuch as women and children surround a herd, and drive it out into a river or lake, where the men lie in hiding with their canoes<sup>1</sup>. The principal yield from the hunting is, however, procured in the autumn, when the reindeer are fat and begin to wander southwards. It is especially on this occasion that the Tundra Indians, like the Prairie Indians and the Eskimo, employ hunting fences. Such fences are mentioned from all districts of the tundra, from the Barren Grounds, and from Alaska north of the Yukon and the Koyukuk. By means of two convergent rows of poles, which may be several kilometres long, the herd is directed out into a lake, where the animals are pushed down from a canoe, — into a fold where they are killed with arrows, or into a kind of maze where they are caught in nooses and snares. The meat which they may procure on such an occasion is prepared into pemmican: dried and pounded meat mixed with fat, which can keep for a long time<sup>2</sup>.

**Comparison between North-Indian and Palæeskimo Forms of Economic Culture.** Two North-Indian forms of economic culture have now been outlined, the reciprocal diversities of which must, no doubt, be ascribed exclusively to adaptation, according to the various geographical conditions. Like the Eskimo culture — especially the Arctic type of this — they are both distinctly divided into a summer and a winter phase.

When we now try to set up a comparison between these forms of culture and the Palæeskimo economic culture we must particularly think of the Arctic Eskimo culture in the Archipelago; because anthropogeographical conditions indicate the Archipelago as being the place of origin of the Palæeskimo culture.

If, first, we take into consideration the summer culture, we find

<sup>1</sup> MACKENZIE, pp. CXXV, 38; HEARNE, I, pp. 70—71, 154—155; J. W. TYRREL, pp. 80 sqq.

<sup>2</sup> MACKENZIE, p. CXXI; HEARNE, I, pp. 74, 113—116, 121—309, 348; FRANKLIN, I, p. 243; RICHARDSON, Vol. I, pp. 393—394, Vol. II, p. 25; SIMPSON, I, pp. 311—312; KING, pp. 154 sqq.; WHYMPER, I, p. 182.

on the one side the most exact conformity between the northern Prairie Indians and the Tundra Indians, or those Forest Indians who spend the summer on the tundra, and, on the other side, the Arctic Eskimo. It is quite characteristic of the latter that they spend the summer in the interior, where they live in tents and carry on salmon fishing and reindeer hunting. The methods of hunting are the same with Eskimo and Indians; but the hunting within fences is especially conspicuous. The diversities are only such as are involved in the altered geographical conditions. On the prairie the animal hunted, in the proper sense of the word, is the bison; on the tundra it is the reindeer. The Forest Indians use the birch-bark canoe — also during their summer stay on the tundra. The Eskimo who are debarred from the forest have had to resort to skin for covering their boats. Indeed, even the difference between the river kayak of skin and certain — older — forms of birch-bark canoes can, I think, be reduced essentially to a difference in material.

When we then regard the winter culture, there at once appears to be a great difference. But this difference will, however, prove to be more apparent than essential in kind. The characteristic of the Eskimo is the life on the smooth winter ice with its methods of ice-hunting, and the snow house. What the facts as regards the origin of the snow house and of the other forms of Eskimo houses are, I shall endeavour to unravel in the following section.

Then there remains the methods of hunting on the ice, as also the winter hunting of the musk ox, still occasionally employed, which formerly seems to have been of great importance. The methods and expedients used with this musk-ox hunting correspond with those of the Prairie Indians on their winter bison hunting.

As regards the methods of hunting seals on the ice, the described culture of the Forest Indians has methods which are in reality also precursors of these. Naturally one cannot expect to find precursors of the Utok method, as this spring hunting method is in such a special degree due to a peculiarity which only the seals exhibit in their mode of living, e. g., that they creep up onto the surface of the ice in order to sun themselves. The Maupok method, on the other hand, is nothing but an adaptation to the fishing through holes in the ice so commonly carried on in the Hudson regions, which are so rich in rivers and lakes. Another old Eskimo method of seal hunting, viz., the *ituarpok* method was even rediscovered direct<sup>1</sup>.

When regarding the forms of the winter implements there is a greater

<sup>1</sup> The method, however, is — as little as the ice-fishing on the whole — hardly "Hudson" in its origin, it is refound with the remaining methods of hunting on the ice at the rivers of Northern Siberia. Probably it has come from Asia with the Palæasiatic-American expansion of culture which presumably took place long previous to there being a question of any kind of Eskimo culture.

difference between the Eskimo and the Prairie and Forest Indian forms, than there seems to be between the forms of the summer implements. Even the river kayak could probably be traced back rather closely to certain forms of the birch-bark canoe; but as regards the Eskimo forms of harpoons and sledges the matter is somewhat different. The snow shoes, on the other hand, are not essentially different. The sledge is of quite another type than the Indian toboggan, and the harpoons display a development and richness in form for which we have no match in the Forest region. In these respects, therefore, the Eskimo winter culture shows a peculiar stamp, which must be considered partly to be caused by the separate development brought about by the great possibilities which the hunting of seals on the ice presents and by the special demands made by this, and partly to be due to influences from without. We must remember that the observed arctic winter culture is not the original Palæskimo winter culture, but a Neoeskimo form i. e. a mixture of Palæskimo adaptative culture with foreign influences. Only if in the Archipelago we had still had a Palæskimo culture, should we be able to observe direct the special development brought about by the hunting on sea ice.

Thus, when we collect these observations of a comparative character, we see that the Palæskimo culture, from the summer point of view, has, or I should say had, not deviated essentially from the North Indian culture. From the winter point of view, on the other hand, it is different; but our investigation of the nature of this diversity, however, also leads the winter culture back to the same source. In this way these observations lead to the following result:

The Palæskimo culture was an original North Indian form of culture, the winter side of which had become specially and strongly developed by adaptation to the winter ice of the Arctic Ocean.

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## Types of Eskimo Dwellings.

(Hereto belongs a plate.)

When to this anthropogeographical work I wish to add a section on Eskimo house types, and to regard these from a more ethnological point of view, it is for various reasons.

In the previous chapters special regard has been paid to the methods of hunting, and less to the dwelling, which, however, is also of great anthropogeographical importance. Moreover, in my work of 1905, I subjected the Eskimo house-structure to the result of my considerations at that time, but that result I cannot now approve of. This refers to the view that the Mackenzie house originated direct from the North American prairie house. At the time mentioned, LEWIS H. MORGAN's work was essentially the only one to hand about North American house-structure, and he employed a more sociological method, and set himself quite a different task from that which now lies before us. In works of travel hardly anything, or only scattered information, was to hand about North Asiatic house-structure. Since 1905 some valuable works have appeared, of which I lay stress on E. SARFERT's paper from 1908 on North American house-types and on H. T. SIRELIUS's papers on the primitive dwellings in Northern Asia from 1906—1909, and in addition to the works of BOGORAZ and JOCHELSON. Finally, regarded from a modern sociological point of view, the Eskimo dwellings have been treated by M. MAUSS and H. BEUCHAT.

In the previous chapters I have already drawn attention to the fact that the form of the Eskimo houses varies considerably, not only because there are forms for use at different seasons, but also because there are forms which seem to show that the history of their origin must be different. I mentioned the summer dwelling or skin tent, the snow house or dwelling for winter travelling and hunting, as also some forms of winter houses.

A division of the last mentioned has lately been given by W. THALBITZER<sup>1</sup>. He distinguishes between three types of these Eskimo houses: 1) The roundish, dome-shaped type, with whale bone as material, 2) the rectangular type, in which the material consists of wood, stones, and turf; and 3) the pear-shaped house, mainly built of stones and turf.

The five different types of dwellings, however, do not entirely exhaust the whole series of house-forms existing amongst the Eskimo.

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<sup>1</sup> W. THALBITZER, II, p. 352 sqq.

In any case three forms can be mentioned which occur with the Eskimo, although with a limited distribution. These three forms are the North-West Indian houses of planks, the pile-dwelling, and also the double winter tent, originating from the reindeer nomads, and now adopted and used by the Asiatic Eskimo and the Eskimo in St. Lawrence Island<sup>1</sup>.

The North-West Indian plank-house, which at times occurs in the form of a log-house, is still found with the Chukches as a winter dwelling, and it is also said to occur with the Kenai-Indians. With the Eskimo in South Alaska we immediately, however, find an earth-covered house as a winter dwelling, while the plank-house occurs as a summer dwelling in the summer settlements, which are inhabited during the fishing season. Where the forest ceases the plank-house disappears, and the skin tent predominates as a summer dwelling<sup>2</sup>.

While the Eskimo have got this plank-house from the North-West Indians they have got the pile-dwelling from North-East Asia. It is a well known fact that Palæasiatic people in North-East Asia, such as the Gilyaks and Kamchadales, use the pile-dwelling as their summer residence. The origin of this pile-work form, however, points still further south across Japan and right to South-East Asia. In Alaska, the pile-dwelling as a summer dwelling has already been mentioned from the islands in Bering Strait, and in this connection is especially known from King's Island. But it also occurs on the coast of Alaska itself; not, however, as a dwelling but as a store-house. Thus PETROFF<sup>3</sup> says about the Kuskoquim district "the store-houses of all the Eskimo tribes are set on posts at a height of from 8—10 feet above the ground, to protect them against foxes, wolves, and dogs."

According to MURDOCH the pile-work structure is found at Point Barrow in the form of stands for preserving and drying meat and such like, and similar stands are found again right towards the east, for instance in Baffin Land, and also in Greenland, where they are commonly employed.

We now come to THALBITZER's three types of winter houses, with regard to which I shall first remark that main stress must be laid on the groundplan and manner of construction, while the material employed ranks only secondarily; as, in this respect, one employs what lies ready to hand. Naturally it alters the house if whales' bones are adopted after wood has been employed, or if, perhaps, stone is exclusively used. But the point is to discover the original type just through such alterations as are involved.

Firstly I mention "the pear-shaped house." This is built by exclusively employing stones and turf, and by that alone betrays itself

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<sup>1</sup> BOGORÁZ, p. 180.

<sup>2</sup> SARFERT, p. 54.

<sup>3</sup> PETROFF, p. 128; cf. NELSON, I, p. 244.



as a non-original form of structure; it is a house type which has originated in districts where wood and whales' bones have been lacking. That this is also evident from its construction one will easily see from the descriptions. I will refer to my own description and illustration in *M. o. G.*, Vol. 34, p. 107 and pp. 311 sqq. (cf. the plate in this volume, fig. 2).

Thus I have endeavoured to show that the "pear-shaped house" must originate from a rectangular house, where whales' bones have been the most important building material. In favour of this I may say, firstly that one finds in the same district old remains of rectangular houses which also were somewhat larger than the present stone houses<sup>1</sup>, and secondly that it appears from the construction itself, with stones which project in pairs opposite each other and help to carry the roof, that in these places the construction at one time must have had beams lying from right to left in order to carry the roof. It is distinctly evident that such a main beam (of wood or possibly of whale bone) must have lain across the centre and just where the main platform began<sup>2</sup>. As a third argument I may now quote the result of the Danmark Expedition to the north coast of Greenland; a glance at THOSTRUP's figures shows that small rectangular houses have been used side by side with such as approach the pear-shaped type<sup>3</sup>.

From this it follows that THALBITZER<sup>4</sup> cannot be right when he regards the pear-shaped house as a relic of the Mackenzie Eskimo house. This building being constructed on quite a different principle, and the similarity in the inner arrangement also being only superficial, inasmuch as the side platforms in the Mackenzie house have the same value as the hindmost platform, while in the pear-shaped house only the hindmost platform is for human use, the side platforms being small lamp platforms.

If on the other hand one wishes to find a house-type which, both in its construction and in its arrangement, shows affinity with the pear-shaped house as well as with the small rectangular house from the north-east coast of Greenland, one must go to Point Barrow. The main feature in the construction of the pear-shaped house, viz., the above mentioned couple of projecting stones at the fore end of the main platform, recurs in the Point Barrow house in the form of a main beam, which carries the roof, which in reality in both cases, according to its construction, is a gable roof, even if the outer covering of earth hides this, and even if the difficulty in finding a sufficiently long beam may cause the house to have a greater extent from the front to the back than from the right to the left (cf. figs. 1—4 on the plate).

The arrangement of the platform, the lamps, the house passage

<sup>1</sup> *L. c.*, p. 307.

<sup>2</sup> Cf. *M. o. G.*, Vol. 34, figs. 8—10.

<sup>3</sup> *M. o. G.*, 44, Pl. II.

<sup>4</sup> *M. o. G.*, Vol. 34, pp. 360—361.

and the entrance from below is the same. Only as regards the window is there a difference of a rather immaterial character, because the Polar Eskimo have had to move the window down on the front side of the house, just above the house passage; while the original window has been retained as a small opening ("the nose of the house").

There is also a congruity in the way that the two forms of houses are placed on the ground, inasmuch as both are placed on slightly sloping ground, and generally near the top of a low hill. As regards the material, the Point Barrow house is constructed of wood, and, which is of no small interest, even planks are employed. According to MURDOCH even whales' bones may enter into the structure, earth being heaped over the whole.

To imagine this Point Barrow house transplanted to regions where there is neither wood nor whales' bones is to imagine the beams replaced by a kind of cantilever construction of stones, and then one has the pear-shaped house, the form of which is only a result of this forced construction. It is best known from the regions at Smith Sound. But yet, as mentioned, approximate forms also occur on the north-east coast of Greenland; though only in ruins. Its distribution is still almost unknown in the North American Archipelago, although it is probable that it is just in the Archipelago with its lack of wood as well as of whales' bones that the Point Barrow house type has first had to change into the pear-shaped house.

We shall now proceed to a further consideration of the Eskimo house of a rectangular type. THALBITZER draws attention to the fact that it is found both in Alaska and in Greenland, and he is justified in saying that one gets the impression that the house from Point Barrow, described by MURDOCH, "is not very different from the rectangular house we find in South Greenland and Angmagsalik."

The principal difference lies in the size. The Point Barrow house is small, and for two families at the utmost, while the South Greenland house may be for several families. On comparing HOLM's figure (fig. 4 on the plate) of a transverse section of an Angmagsalik house with the corresponding one from Point Barrow by MURDOCH, one gets an impression of the affinity in construction; but a comparison of the ground-plans shows the difference in size. Elsewhere<sup>1</sup> I have tried to show that the South Greenland common-house must be thought to have come about through a row of houses lying side by side being built into one. In other words the idea which has been carried out here is quite different from that which underlies the Mackenzie house, which likewise can contain a larger number of families (up to two in each niche or six families in all). This also shows distinctly that the pear-shaped house is not an off-shoot of the Mackenzie house. If such were the case there

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<sup>1</sup> M. o. G., Vol. 34, pp. 322 sqq.

is no doubt that in South Greenland, on account of the greater supply of drift-wood, an attempt would once more have been made to realize the Mackenzie house.

Now, on the other hand, a common-house has been made which distinctly evinces the relationship with the two North-Greenland small forms of houses, the pear-shaped house and the small rectangular house. As mentioned, these two are really of the same kind, inasmuch as the rectangular house necessarily must merge into the so-called "pear-shaped house" the moment the stones have to be employed exclusively. In 1909 I was inclined to regard the "pear-shaped house" as the only direct precursor of the South Greenland common-house. At that time it was not so evident, as was made clear by the Danmark Expedition, what a great rôle the small rectangular house has played in North Greenland, though, even then, the existence of that house form was not unknown. From the regions about Scoresby Sound it was known from RYDER's<sup>1</sup> and AMDRUP's<sup>2</sup> reports of their expeditions. From North-western Greenland at Wolstenholm Sound it was known to me partly from verbal information from KNUD RASMUSSEN and partly from my own observations.

Thus, I shall only point out that the result is that the South Greenland common-house originates both from a pear-shaped house and from a small rectangular house like that we know from the north-west and north-east coasts of Greenland, and that by the way in which it is arranged it plainly shows that it has got its interior arrangement from the building together of small houses lying side by side (cf. M. o. G., Vol. 34, p. 328, Figs. 14, 15 and 16)<sup>3</sup>.

In this way, then, the predecessor of the South-Greenland common-house dates right back to the house-type at Point Barrow or to the rectangular house with a wooden structure and a covering of earth. When whales' bones have been employed, these have entered into the structure as a direct substitute for wooden beams or planks, and one must keep this construction distinct from a quite different one, into

<sup>1</sup> RYDER, pp. 296 sqq.

<sup>2</sup> AMDRUP, pp. 314 sqq.

<sup>3</sup> AMDRUP and RYDER both were of opinion that the small rectangular houses were precursors of the large common-house, whereas now BIRKET-SMITH thinks that the small house is to be considered as a simplification of the large one. Even if BIRKET-SMITH is evidently right when on account of the distribution of different implements both on the west coast and on a considerable part of the east coast, he decides that at a certain period migrations from the west coast to east coast must have taken place, I am not inclined to agree with him in his conception of the origin of the small rectangular house. I would rather believe that the development of the big common-house took place at a later period than the migrations which he refers to.

which whales' bones may also enter, and which was called the round, dome-shaped type; this will be mentioned later.

The distribution of the rectangular house in the Central Archipelago, Baffin Land and Labrador is but little known. As mentioned, it is probable that even in the Archipelago it was early merged into a pear-shaped form. It is also probable that in some places it is intermingled with the round type of house which otherwise has been predominant in the Archipelago. It seems as if BOAS'S observations from Baffin Land may indicate this<sup>1</sup>.

In Alaska, however, the rectangular house plays a great rôle. Besides the before mentioned younger forms two types of houses are predominant in Alaska, one of which is decidedly rectangular, while the second perhaps seems to be derived from a square form. It is, however, just the origin and history of development of these house-forms which we now shall try to find out. For convenience sake we may again call the first type the Point Barrow type, because Point Barrow is the place in Alaska where we first met with this form, while the other was long ago named after the Mackenzie Eskimo.

The Mackenzie house was the predominant one with that group of Eskimo which we have here named after the Mackenzie River. In addition it occurred at Kotzebue Sound, although here it was not predominant<sup>2</sup>. A house of the Point Barrow type is predominant, on the other hand, along the entire west coast of Alaska from Point Barrow to the region south of the mouth of the Kuskokwim River. SARFERT describes it as the typical West Eskimo house, which, however, might be misunderstood, as the most ancient West Eskimo house probably was of a still older type (the round dome-shaped type). On the Aleutian Islands underground houses occurred originally, which were of considerable size, and held several families; they were probably built with the aid of drift-wood and whales' bones, and were probably a form of this rectangular house.

According to PALLAS the houses in Unalaska were dug a fathom deep in the ground, and covered with drift-wood. In Kadiak are found remains of underground houses which seem to be of the same type as the house in the Aleutian Islands<sup>3</sup>. It is possible that this common-house represents a form of development which is parallel to the common-house in Greenland; SARFERT<sup>4</sup>, however, is probably right in assuming that it originally came from the Asiatic Pacific Coast, where such large houses were formerly in use.

On further observing the house of the Point Barrow type, or the predominant winter house in West Alaska, we get through the forms

<sup>1</sup> The Central Eskimo, pp. 494—502.

<sup>2</sup> COLLINSON, III, [Fig.]; SIMPSON, III, pp. 932 sqq.

<sup>3</sup> Cf. JOCHELSON, p. 464.

<sup>4</sup> SARFERT, pp. 61—62.

here a still stronger impression of it being a rectangular gable-house, where the supports are formed of wooden beams. The rôle which wooden planks generally play in the covering of floors, walls and platforms is a point of special interest, and shows that the house must originate from more southern parts of the globe.

The house itself is dug somewhat down into the ground, and then covered with earth, so that one is not wrong in calling it "underground." The entrance to the house which, on account of the covering of earth is from the outside not of the gable type but roundish, is through a low, underground passage which leads into the house in the middle of the one side (originally the long side) facing the main platform. The entrance is frequently double, inasmuch as there is a high lying passage for use in summer and a low lying one for use in winter<sup>1</sup>. The same is found in Asia. The habit of using the top-hole of the house as an entrance, well known to the Palæasiatics, recurs in America, it was found, for example with the Aleuts. On the Asiatic side of Bering Strait, where whales' bones must almost entirely replace drift-wood, and where, as before mentioned, the form of dwelling is influenced from the interior of Asia, the rectangular house occurs in a somewhat changed variant<sup>2</sup>, which, however, may easily have been related to the Aleutian house, such as PETROFF<sup>3</sup> describes it.

There can be no doubt that the described house type originates from more southern latitudes. Form, material, and construction bear witness to this. Everything bears the impress of its having originated from regions with an abundance of wood, and from districts with such a mild climate that houses of wood have been used, at any rate posts of wood, the walls being of planks, mats, or perhaps wattle, and not covered with earth.

As SARFERT points out, a rectangular earth-house is really a *contradictio in adjecto*, for which reason it must be assumed that "der viereckige Erdbau sich aus dem viereckigen Holzhaus entwickelte oder sich zum mindesten an ihn anlehnte."

The question is, then, from where can this rectangular house which was transformed into an earth-house originate. There are at once two places which are conspicuous viz., North-Western America (the North-West Indians) and North-Eastern Asia (the Pacific-Asiatic region). The North-West Indian house, however, has scarcely exercised any greater influence than has already been mentioned from South Alaska, where it becomes the summer dwelling at the fishing places. Nor does a glance at the construction and plan-work show that the one has been the direct model for the other.

<sup>1</sup> Attention is specially directed to NELSON's description and illustrations of Eskimo houses from Alaska (NELSON, I, pp. 241 sqq.).

<sup>2</sup> BOGORAZ, pp. 180 sqq.

<sup>3</sup> PETROFF, p. 128.

Different forms of earth-houses occur however in North-America besides; a rectangular earth-house is also known from Northern California. There cannot, however, be any question of its being one of these forms which has been transferred to the Eskimo domain. The type is quite different. There is no doubt that JOCHELSON<sup>1</sup> is right when, on the basis of his investigations, he says "we may draw the conclusion that the underground houses of the Palearctic tribes bear more similarity to those of the Aleuts and Alaskan Eskimos than to the underground dwellings of the North-Western Indians."

In this way nothing remains but North-East Asia. We must assume that the rectangular earth-house is due to Asiatic influence exerted along the Pacific Coast. SARFERT<sup>2</sup> also assumes something of the same sort when he emphasizes some features which he thinks are to be found both with Aleuts and Alaskan Eskimo, and in the older houses which formerly were in use with the Kamchadales, Koryaks and Gilyaks. Still further south we find semi-underground rectangular houses which from outside appear like round hills. R. HITCHCOCK<sup>3</sup> has observed such on a small island Thikotan off the east coast of Jesso, and he supposes that similar houses formerly played a rôle on Jesso, where he could see the hollows where the houses had been.

There still remains to be mentioned that form of an apparently rectangular house which we have called the Mackenzie-house. Formerly I assumed that it was a further development of the earth-covered prairie-house, which, through CATLIN's and the PRINCE OF WIED's descriptions for example, we know so well from the Mandans. Thus I thought that the Mackenzie house was an original round house like this prairie-house, and that it had adjusted itself to this peculiar cross-form in the ground-plan. I supposed that this form of house might have struck root at the mouth of the Mackenzie on account of the great richness in drift-wood. Now, however, I must admit that THALBITZER is right when he, on the basis of SIRELIUS's work, points to Asia as the place of origin for this form of house.

It seems to me that in reality the history of the development and origin of the Mackenzie house is now manifest. The source of origin must be a form like that which, according to SCHRENCK, we find with the Gilyaks. It is an earth-covered, approximately square house with four posts in the centre which carry the obliquely placed poles or beams which form the walls and the roof. Inside, out from the three sides, rectangular platforms are placed, while the entrance is found in the fourth side. The fire place is in the middle of the floor. A form of house quite corresponding with this is found with the Koryaks<sup>4</sup>. Next it is

<sup>1</sup> JOCHELSON, p. 446.

<sup>2</sup> SARFERT, pp. 61—62.

<sup>3</sup> HITCHCOCK, p. 425, Fig. 65 and Plate LXXIX.

<sup>4</sup> JOCHELSON, p. 454.

refound at Kotzebue Sound on the coast of Alaska, and finally in the Mackenzie district<sup>1</sup> (cf. figs. 5 and 6 on the plate).

When these northern regions are reached, there are two facts, however, which assert themselves. Firstly the wood-fire in the middle of the floor of the house has to be relinquished and replaced by the blubber-lamp, secondly the cold becomes more perceptible. These two facts enforce the avoidance of any superfluous space which would make the warming up of the house more difficult. The problem is solved by filling up the platformless space between the platforms, the outer walls being drawn in to the platforms themselves, which thereby come to lie in niches. Finally the construction is thus so altered that the roof becomes flatter and lower, and the space becomes restricted by this also.

By these means a house is attained which can comparatively easily be warmed up, and which can nevertheless hold a relatively large number of inhabitants. The geographical distribution of this house in America enters like a wedge into the West Eskimo domain from Kotzebue Sound to the Mackenzie region (in this connection one must remember that the most used route of communication from Kotzebue Sound to the Mackenzie does not go round the coast past Point Barrow but straight across country along Colville River to the coast of the Arctic), and this condition of distribution may perhaps indicate that this form of house has arrived at a later date than the rectangular house. Like the latter, however, one must suppose that it originates from Asia, and that it has been introduced along the coast route; but it seems that not until the Mackenzie-domain is reached do we find it finally adapted to the conditions of Arctic winter dwelling. This explanation is more probable than SARFERT's assumption that the whole development from an ordinary rectangular house into a Mackenzie house must have taken place in America amongst the Eskimo. To this must be added that SIRELIUS has now shown how the Gilyak earth-house, which in my opinion represents the primitive form of the Mackenzie house, has eventuated from the conical tent, in that this, as a support for the roof, is provided with four, or sometimes more, inside wooden pillars. So far, therefore, the Mackenzie house originates from a circular building; but the point of origin is in Asia and not in America. Thus I agree with THALBITZER<sup>2</sup> as regards the possibility of the Mackenzie house finally being traced back to the Siberian "earth tent"; but I do not agree with him when he assumes that it is one of the most ancient Eskimo domiciliary forms. Necessarily it must have found its way into Alaska at a secondary period, no matter whether it came later than the rectangular house, or even if it perhaps came somewhat before this.

In this way the forms of the Eskimo houses which have been

<sup>1</sup> Cf. SARFERT, pp. 56 sqq.

<sup>2</sup> M. o. G., Vol. 39, p. 361.

previously mentioned all seem to originate from Asia, setting aside the North-West American plank-house, which, also, no doubt, will ultimately prove to be of Asiatic origin. The lately introduced forms, such as the pile-work and winter dwelling adopted from the Chukches, are of the smallest importance as regards dwellings. The so called Mackenzie house stopped at the Mackenzie area, and it is probable that lack of wood determined the limit. On the other hand the rectangular house of the Point Barrow type extended into Greenland to the eastern boundary of the Eskimo, though it had to be converted into a pearshaped house locally where only stones were to hand; into the small rectangular house in districts where the wood was replaced by whales' bones; and finally into a large common-house in South Greenland.

The whole of this group of houses has been adopted by the Eskimo in the districts round Bering Strait — in the second geographical focus of the development of the Eskimo culture, — and therefore, pursuant to the established terminology, must be designated as *Neoeskimo*.

There now remain to be mentioned some forms of dwellings which will prove to represent the oldest development of Eskimo culture in the Arctic Archipelago — the first geographical focus — whence they have spread as far west and east as the primary Arctic distribution has reached.

While the first-mentioned group consisted principally of rectangular houses, this second group consists of forms with a circular ground-plan. The tent, the snow house, and the before mentioned winter house of a circular dome-shaped type belong to this group.

Often it may be difficult to keep the last mentioned separate from the winter houses of the *Neoeskimo* group. As a rule the latter from outside also appear like round hills of earth, so that it is only by the interior or by the ground-plan that they can be distinguished. To this must be added that a rectangular house, where wood disappears or decreases in importance, has a natural inclination to change to a roundish form. This appears distinctly in the pear-shaped house, and is also observed as regards the rectangular houses.

Firstly I will mention the tent, because the circumstances as regards this are clearest. A tent of reindeer skin is the typical summer dwelling of the Eskimo from Alaska to Greenland and Labrador. It appears, however, in a somewhat different form. The dome-shaped tent known from the Indians in the forest regions in Alaska and the Hudson lands, which generally and justly is regarded as the old, original form for a summer dwelling occurs at Kotzebue Sound<sup>1</sup>, and the summer house at the Lower Kuskokwim described and illustrated by PETROFF<sup>2</sup> likewise has the form of the dome tent. For the rest, the Western Eskimo seem to use tents which are conical, like the "tipi" tents from the prairie,

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<sup>1</sup> SARFERT, p. 25.

<sup>2</sup> PETROFF, p. 128.



and like these must be regarded as derived from the dome tent. The conical tent is not very spacious, but it requires fewer skins than most other forms of tents. For this reason it is also occasionally found with the Central Eskimo in a small dwarfed form, which is only pitched where there is a lack of skins<sup>1</sup>.

With the Central and Eastern Eskimo, however, we find a somewhat different form of tent, which must also be regarded as a conversion and a more direct one of the dome-shaped tent. When one gets to northern regions where drift-wood and whales' bones are the only material fit for use as tent supports, one cannot make the dome-shaped tent, as this requires young pliable stems from the forest.

One must therefore be contented with making a single arch or frame, over which the framework is then placed, and in such a way that the tent is highest in front. Behind, the ground-plan is a circular arch, which is cut straight off in front.

A tent of this simple type is still in use with some central and eastern tribes, for example the Angmagsaliks<sup>2</sup>; in order to increase the space, the lower end of the tent poles may be fixed in a mound of earth and stones instead of being placed in the ground itself. In West Greenland the tent has an addition in front of a rectangular extension, a new frame being connected with the door-frame by horizontal poles.

With the Central Eskimo, the tents with a rectangular front part seem to predominate<sup>3</sup>. On an average, however, the tents of the Central Eskimo are worse made than those of the Greenlanders on account of the greater scarcity of wood. This, for example, appears in the cases from Iglulik and other places emphasized by BOAS, where wood is rare, and where the carrying frames are replaced by perpendicular poles of wood or bones, while the horizontal bars in the ante-space are replaced by a horizontal cord. In these cases, however, the back of the tent has preserved its circular form. On the other hand this is not the case in Labrador, where it has disappeared, and only the rectangular front has remained. SARFERT likewise explains that the arrival of this form of tent is due to lack of wood, and I believe he is right. In 1909 I found the same form of tent in use in West Greenland in the district round Egedesminde, and I then<sup>4</sup> assumed that perhaps it might be due to European influence. This, however, can scarcely have been the case, all the more so because, according to verbal reports to me from KNUD RASMUSSEN, the same form of tent may be found now and then amongst the Polar Eskimo.

After the tent I will mention the roundish, dome-shaped type of Eskimo house, but I must remark at once that undoubtedly my con-

<sup>1</sup> BOAS II, pp. 552—553.

<sup>2</sup> BOAS II, pp. 552—553.

<sup>3</sup> Cf. SARFERT, pp. 26 sqq.; BOAS II, pp. 559 sqq.; KLUTSCHAK, p. 139.

<sup>4</sup> M. o. G., Vol. 50, pp. 155 sqq.

ception of this type is quite different from that of THALBITZER and other authors.

I do not lay main stress on the fact that it has preferably been erected by employing whales' bones. Whales' bones can also act as a substitute for wood in forms of houses which have quite a different origin than the form mentioned. It cannot be the full explanation, as MAUSS and BEUCHAT think, that it is the exclusive employment of whales' bones which results in the arrival of a new type of house which is "petite, penchante, a forme circulaire ou elliptique. Le mur est recouvert de peaux, recouvertes, a leur tour, de gazon; ...."<sup>1</sup>.

What however, in my opinion, is characteristic of this dome-shaped house is that it descends direct from the tent in its Central and Eastern-Eskimo primitive form, or more correctly, is nothing else but this tent furnished as a winter dwelling with a passage and a cover of earth, plant material, or snow on the top of the skin-covering. In the next place it is either dug into the ground somewhat, or has a mound of earth and stones. The framework is as with the tent mentioned from the Central and Eastern Eskimo; in front there is a supporting arch or frame which carries the remaining framework of sloping bars. Similar examples of a form of tent having passed over into an earth-tent are known from North Asia (cf. SIRELIUS). The fact is not unique, but is a well known phenomenon.

Houses of the type mentioned are described by BOAS from the Central Eskimo, where they are called *qarmang*. Houses of this type have a passage of stone, and the arrangement inside is the one also known from the rectangular houses with a broad platform at the back and side-platforms for lamps and cooking utensils. The framework is carried by the rib of the whale which forms an arch. "The whole curve formed by the rib is covered with a window of seal intestines, while the poles are covered with sealskins, which are fastened in front to the whale-rib. .... The roof is covered with a thick layer of *Andromeda*, and another skin, .... is spread over both covers." The houses before mentioned from the Melville Peninsula have, I think, originally been of the same kind.

No doubt, houses of this type are no longer found with the Western Eskimo with the exception of the Eskimo on the Asiatic side of Bering Strait. From here NELSON mentions and illustrates houses with a somewhat oval ground-plan, which apparently must be accounted to this district. That the tent as a winter dwelling has been able to hold its own on the Asiatic coast while it has disappeared on the Alaskan coast (it is not predominant in Asia however; as already mentioned, other forms of winter houses are now generally used) is quite interesting.

Apparently this dome-shaped house has also existed in Greenland.

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<sup>1</sup> MAUSS and BEUCHAT, p. 73.

According to verbal information from KNUD RASMUSSEN there exist in Melville Bay old house-ruins of an oval form which according to his information seem probably to be of this type. How far ruins of a similar type occur south of Melville Bay is not known. K. BIRKET-SMITH has lately described some ruins from Southern Greenland which he likens to houses from Baffin Land which are indubitable earth-tents. He from GEORGE BEST's "True Discourse of the three Voyages . . . under the conduct of MARTIN FROBISHER," first cites a very striking description of such semi-underground houses with a framework of whales' bones and a roof of skins, and then he tries to show that such houses have existed on the Greenland side of Davis Strait<sup>1</sup>. BIRKET-SMITH, however, does not distinguish, as we do here, between a dome-shaped type of house which originates from the tent, and a rectangular house of quite a different origin. Therefore he can compare the house from Baffin Land with the house ruins from Julianehaab which for the rest he apparently correctly considers to be old rectangular small houses from the time before the common house. Yet, further, I agree with him when he expresses some doubt as to whether the house-ruins found by V. C. FREDERIKSEN<sup>2</sup> at Holsteinsborg really originate from the pear-shaped house type (trefoil houses, as FREDERIKSEN calls them). I could imagine that in reality they were of some more modern house type.

The mentioned type of house which ought rather to be called the Eskimo winter tent or "earth-tent" than the dome-shaped type consequently seems to have a very sporadic distribution, which corresponds with the fact that it is an old form of dwelling which once had a greater distribution, but which is now superseded by other types of houses. In Alaska and at the Mackenzie, as also eastwards and especially in Greenland, it has been superseded by forms of houses which originally have come from Asia. In the districts of the Central Archipelago it is the snow house which has won.

The snow house, the most characteristic form of dwelling of the Eskimo culture, must in its origin, however, be apprehended as being brother to the winter-tent. Even MURDOCH<sup>3</sup> expressed the opinion that in all probability the bee-hive-shaped snow house must be regarded as succeeding the tent. In 1905<sup>4</sup> I tried to show that the snow house must have developed from the dome-shaped tent, as for winter use this was covered with snow, as it still is with the northern Indian tribes. But besides the dome-shaped tent there is still one form of house which possibly may have played a rôle as a precursor, and at any rate is a kind of parallel to the snow house. It is the round house which is dug into the earth and is partly built of turf, and which occurs in North

<sup>1</sup> M. o. G., Vol. 53, pp. 9 sqq.

<sup>2</sup> FREDERIKSEN, pp. 391 sqq.

<sup>3</sup> MURDOCH, II, p. 127.

<sup>4</sup> STEENSBY, I, p. 191.

America: on the prairie for example. It has not been possible to transfer such an earth-house to the tundra and the coasts of the Archipelago without more ado, and this for several reasons, of which the most important is the loose consistency of the soil compared with the solid sods of the prairie<sup>1</sup>. Added to this is the great scarcity of wood, and, also, the fact that the ground is almost always frozen and impenetrable. On the prairie it is possible to raise a mound of turf, but this cannot be done on the coast of the Arctic Ocean. There the soil can only be used to cover a sloping surface, where it can lie firmly. If one wishes to have a firmer mound, or wall, it must be of stone, or at any rate must have a firm core of stone.

But then, on the other hand, there is the snow, which on the tundra can take the place of the firm sod of the prairie. In reality the snow is an ideal material to use. One can easily dig out a round hollow in the snow, and with the snow build a wall round the hollow, in a similar way as one sets up a wall of turf round the hollow of the house on the prairie<sup>2</sup>. Nowadays the opening above is closed with a vault. Originally, of course, there must have been times when this was not known, so the snow house was covered with skins in a similar way as it still is towards spring, when there is a risk of the snow-vault melting and collapsing, a practice still in common not on the Alaskan coast south of Point Barrow through the winter.

I have tried also to correlate the snow house with the North American round earth-house, because, *inter alia*, a round earth-house and, besides this, the dome-shaped tent evidently represent a couple of the oldest forms of dwellings, not only in these districts, but also in Northern Asia. Probably they must both be reckoned as typical adjuncts to the oldest Palæasiatic-American culture in the northern regions with the cold winter.

In its oldest form, such as it must be supposed to have been here, the snow house, therefore, must be apprehended as a snow-tent — or a parallel with the earth-tent. Not until later — perhaps even relatively late — was the art of making an arch acquired. But, when this was acquired, the snow house gradually became so greatly improved that finally it was able almost entirely to supersede other forms of winter houses from the central districts.

How the art of building an arch was acquired is a difficult question. There are two possible explanations: either the Eskimo did not learn

<sup>1</sup> Cf. STEFANSSON, I, p. 346.

<sup>2</sup> A geographical condition must also be emphasized, which stipulates that it is on the tundra and the sea ice that the snow house has arisen, and not in the forest. The fact of the matter is that in the forest the snow falls evenly like a homogeneous but comparatively thin and loose layer. In the open districts north of the forest boundary, however, large masses of snow collect in places which is a contingency with the building of snow houses.

to build the arch until towards Bering Strait they came in contact with people with a higher and richer culture — the vault then would first be Neoeskimo — or else they themselves thought of closing their snow-tents at the top with an arch, whereby they could save themselves the trouble of carrying tent-skins on their sledges during rainy weather.

Which explanation is correct I shall not endeavour to decide with certainty. Personally I believe in the first explanation, viz., that the Eskimo have through long periods used snow houses closed at the top with skins, and that only relatively lately have they learnt to close it with an arch. If, however, contrary to expectation, the second explanation should prove to be the correct one, it is perhaps possible that those authors may be right who have advanced the theory "that the Eskimo might possibly have borrowed the idea of their dome-shaped snow houses from the snow-burrows of the seals on the ice."<sup>1</sup>

Quite apart from this problem, it ought to be evident from the preceding description that the three last mentioned forms of dwellings — the summer-tent, the earth-tent, and also the snow house — are Palæeskimo in their origin.

From the American Arctic Archipelago and with the Palæeskimo culture, which was purely Arctic in its character, they have spread as far eastward and westward as this culture was able to advance. This probably means right up to the north coast of Bering Sea in the west, and to Labrador and the Arctic parts of Greenland in the east.

Summer-tent and snow house have been able to hold their own; but instead of the earth-tent improved forms have appeared in most places, the so-called Neoeskimo group of houses, the origin of which is due to Asiatic influence.

How these two groups have influenced each other is a problem in itself. Thus when houses of the Point Barrow type get their window moved down from the side of the roof so that it begins immediately above the lowermost end of the house passage, while a little air hole in the side of the roof remains as a kind of rudimentary window, this is without doubt borrowed direct from the Eskimo "winter-tent" or Eskimo "earth-tent."

The idea of a house sunk in a hollow and covered with earth is older than the origin of the Palæeskimo culture. The same applies, no doubt, to the employment of a simple, earth covered house passage. On the other hand the arrangement of the house passage which is now mostly used, and whereby one enters the house from below, is no doubt of later origin.

It probably originates from Asia, and has then passed from the Neoeskimo group of houses into the Palæeskimo form. As an example

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<sup>1</sup> THALBITZER, M. o. G., Vol. 39. p. 363; the idea, however, has also been advanced by other authors.

I shall mention that according to KNUD RASMUSSEN<sup>1</sup> it was from the Pond-Inlet Eskimo who immigrated in the early sixties that the Polar Eskimo at Smith Sound first learnt to build snow houses with a long passage and an entrance from below. Before then snow houses were built, but the passage was shorter, and it was not understood how to give the house an entrance from below, and this in spite of the fact that such an entrance was used even in the pear-shaped winter houses.

One might also ask what the conditions were with other features common to the different types of Eskimo houses, as, for instance the platform and the blubber lamp. As concerns the latter, there can be no doubt that HOUGH is right in saying that from the very beginning it was a necessity for the Eskimo directly they left the forest. The lamp must, no doubt, be Palæeskimo; still it is scarcely an Eskimo invention, but lamps were no doubt used even as early as the days of the Palæasiatic-American earth-houses. And very likely something similar applies to the platforms, even if there may naturally be reason to assume that, owing to the Neoeskimo adopting Asiatic culture elements, both the lamp and the arrangement of the platform have been subjected to essential improvements.

Still one more result must be emphasized as being evident from this description of the types of Eskimo dwellings, and that is that one cannot imagine this distribution of the rectangular houses of the Neoeskimo group from West Alaska to the shores of the Atlantic eastwards, without a spreading, or if one prefers it a migration, of people having taken place. For us, one of the most important results of this investigation of house types is the fact that Neoeskimo migrations from west to east must have taken place.

Whether these took place at one time and wholly, or at broken intervals, is at present a minor question. But on the other hand I must at once draw attention to the essential difference which exists between the nature of these Neoeskimo migrations and the nature of that older migration undertaken by the Palæeskimo when they dispersed from the Archipelago. The migration of the Palæeskimo must have been of rather slow growth, and over regions unknown, the habitable advantages of which could be understood only by degrees. The Neoeskimo, on the other hand, migrated backwards so to speak, along trodden paths; they represent, originally, a surplus Alaskan population which, with its higher technical culture, was able to turn the old regions to account in a more intensive manner. Probably the Neoeskimo migration does not represent one wave of immigrants but more, some of which must have reached the remotest districts of Greenland and Labrador. Another problem is if these migrations as a rule resulted in a close amalgamation of the Palæeskimo and the Neoeskimo before new advan-

<sup>1</sup> KNUD RASMUSSEN, *Nye Mennesker*, p. 31.

ces took place, or if the Neoeskimo waves generally rolled onwards depending only on the geographical conditions.

With regard to the types of Eskimo houses the result of this examination is then, that a Palæeskimo and a Neoeskimo group of dwellings can be pointed out.

The Palæeskimo group is the summer-tent, the so called earth-tent and the snow house. Of this the summer-tent and the snow house have kept their position, while the earth-tent is on the point of disappearing.

The Neoeskimo group consists of the forms of rectangular houses including the pear-shaped house derived from this; and further the so called Mackenzie-type; and lastly the pile-building and some few other, in this connection more insignificant, house forms from Alaska.

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## Theory on the Development of the Eskimo Culture.

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I have now given in the preceding chapters firstly a more extensive anthropogeographical study of the various nuances of the Eskimo culture, nextly a smaller anthropogeographical summary of the adjacent forms of economic culture, and finally an ethnographical synopsis of the forms of Eskimo dwellings.

Amongst the results of these investigations may be emphasized the demonstration of the point that two principal groups of elements occur in the economic culture of the Eskimo — an older group — the Palæ-eskimo — which may be explained as a geographical product of adaptation, which in all probability issued from the regions between the Arctic Archipelago and the coast of the mainland — and a younger group, which is due to influence and borrowings from without, and must especially have been adopted and fashioned in the regions at Bering Strait — this is mentioned as the Neoeskimo.

The investigation of the forms of dwellings plainly confirmed this distinction between the two layers of culture, and furthermore bore testimony to the fact that there must have been extensive Eskimo wanderings corresponding with each of these layers.

For safety's sake I wish to emphasize that with these sections I consider that I have finished the essential scientific investigations which I wish to advance. On the basis of the results attained, I intend in the following pages to try to outline a more elaborate theory of how, in my opinion, one must regard the probable process of the origin and development of the Eskimo culture on a large scale (compare the map).

### The Continental Area of the Pre-Eskimo.

The oldest native seat to which with any probability at all one can trace back the Eskimo is the region between Barren Grounds and the northern part of the prairie. One must assume that at a certain period the Eskimo must have lived here, and have utilized the natural resources of the country by hunting and fishing in a like manner as the later Indian inhabitants did.



Over how large an area these pre-Eskimo have lived — whether they have also occupied the northern parts of the prairie, and to how great an extent they originally, in addition, extended on to the tundra — nothing can be decided: not on an anthropogeographical basis at any rate.

These original Eskimo spoke a language which was the mother-tongue of the present Eskimo language; but for the rest they have been more "Indian" than "Eskimo" in culture. By this is only meant North American, i. e., continental; because one cannot assume that, from an ethnographical point of view, their previous history has been extensively American; even at this early stage one is obliged to reckon with Asiatic influences, probably Asiatic immigrations, which have brought certain fundamental Palæasiatic-American possessions of culture, such as, probably, bark-boats, snow-shoes, earth-house, oldest tight fitting skin clothes, etc. But to what extent the mentioned pre-Eskimo inland culture has been American, and to what extent Asiatic elements have been present cannot be inquired into in this connection.

### **The Rise of the Palæeskimo Culture in the Archipelago by New Adaptation.**

In the preceding pages the Palæeskimo culture is explained as an originally North Indian form of culture of which the winter side has been specially developed by adaptation to the winter ice of the Arctic Ocean.

It must be assumed that the above mentioned pre-Eskimo inhabitants of the interior gradually moved beyond the tundra, and especially onto the Barren Ground<sup>1</sup> area, in that they exchanged their forest hunting and bison hunting for the hunting of the reindeer and musk ox of the tundra. The original wintering in the forest had by degrees to be abandoned — by some of the groups at any rate — on account of the distances. Wood as fuel had then to be replaced by fat and tallow, and bark as a covering for boats by skin. Here one must not think of new inventions. The things which circumstances forced into prominence were well known matters. In the northern part of the prairie the boats have up to present times been covered with bison skin, and fish-oil was occasionally employed as fuel by Indian tribes.

The essential impulse to the development of the Eskimo culture did not come until the Eskimo accustomed themselves to stay at or on the sea ice in the winter and hunt seals. To a hunting people, which lived by following the migrations of the herds of animals, this transition had

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<sup>1</sup> It must be noticed that by Barren Grounds I here in a particular sense mean the peninsula-resembling domain northwest of Hudson Bay and east of the Coppermine River.

to be a necessary result of the mode of living and the anthropogeographical conditions. The following of the migrations of the herds of animals had necessarily to lead the Eskimo to the sea coast and out across the sea ice.

As was pointed out in the preceding pages, one must presume that this, the rise of the Palæeskimo culture through geographical new adaptation, took place in the Arctic Archipelago or, more correctly, at the coasts and indentations between the continent and the islands, which means, firstly, along the district from Coronation Gulf to the Melville Peninsula. It is reasonable to suppose that again, among these areas, on account of its position, it was Coronation Gulf, or rather the regions between the continent and Victoria Land which were first reached by the Eskimo and which played a principal rôle in the new adaptation.

It might be asked whether the pre-Eskimo advance towards the north, to the tundra and the Archipelago, took place voluntarily or was due to pressure from southern neighbours. One will probably never be able to decide the question. But here it is to be strongly emphasized that life at the Arctic sea coast, far from indicating a step backwards, in reality indicated a step forward as regards economy, inasmuch as, in addition to the hunting of terrestrial mammals and summer fishing in the fresh waters which was already known, the practice of hunting aquatic mammals was acquired as compensation for the ice fishing on lakes and streams. The contrast between this fishing on the ice of lakes, which was only resorted to in times of need, and the sea ice hunting of seals gives a kind of standard of progress. One can then very well imagine that no pressure has been necessary, but that the pre-Eskimo have been tempted out to the coasts of the Arctic Ocean by natural conditions.

When the Palæeskimo culture had once been formed it naturally spread spontaneously west, east and north along coasts and coast waters, across the districts which offered the geographical conditions which it required, and to which especially pertained smooth winter ice with seals and the occurrence of musk ox and reindeer, or at any rate one of these two hunting animals in abundance.

This Palæeskimo distribution must have taken place evenly, or must have developed by degrees as a slow growth across the countries. Only small groups of a few families have by degrees ventured further and further away. As regards their nature even these Palæeskimo migrations must correspond with the later wanderings which I have mentioned elsewhere<sup>1</sup>, and with regard to which I pointed out that they must specially have been connected with the domains where the musk ox has or had its distribution.

It must be assumed that even the Palæeskimo must have made

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<sup>1</sup> M. o. G., Vol. 34.

use of the "musk ox route" to Greenland. It is naturally difficult to express any opinion as to whether they have reached out along the coasts of Greenland and along the Arctic coasts of North America both in the direction of Labrador and in the direction of Alaska. Anthropogeographically considered, however, it is most natural to assume that the Palæeskimo have to all sides reached as far out as the Arctic Eskimo culture occurs at the present date.

With regard to the migration routes in the Archipelago itself, I must state that I am inclined to believe that the main route from the coast of the continent to the islands at the northwest coast of Greenland (Ellesmere Land and others) has not gone from Boothia Felix Peninsula direct towards the north, but that the route has more frequently gone from Coronation Gulf along the south-west coast of Victoria Land to Prince of Wales Strait; further through this and across Banks Strait to the south coast of Melville Island, and thence along the south coast of Parry Islands and between these islands to Ellesmere Land. The present apportionment of the population, the position of the deserted settlements, and the anthropogeographical conditions (the occurrence of winter ice and of musk oxen) speak in favour of this route as being particularly attractive and accessible (compare the map).

### **The Neoeskimo Culture a Result of Foreign Influence (acculturation).**

The Palæeskimo must be assumed to have been the first people to move into the here mentioned Arctic regions and to adapt their culture to an Arctic mode of living after these regions had been freed from the ice covering of diluvial times.

Like other northern cultures the Palæeskimo culture, has, however, also later been the subject of influence from more southern regions and cultures. But what especially happened with the Eskimo culture was that this influence quite particularly took place on the flank of the Eskimo territory of distribution, viz., in Alaska. While other northern domains of culture, of somewhat greater extent, received influence in places which were geographically different, this was not, or rather only in an inferior degree, the case with the Eskimo domain. Here the influence set in at one fixed part of the domain, namely in the districts at Bering Strait.

The character of the influence was indicated earlier and in the same way I also tried to decide its sources, a task which, however, offered special difficulties on account of our inferior knowledge of the ethnographical and the historical conditions in North-Eastern Asia. In the preceding pages I have endeavoured to give a summary of the sources for influence which necessarily must have been in activity.

Here, however, I will venture to educe one of these sources, which in my opinion must have been active in a special degree, without, however, my being able to state certain ethnographical, or even certain historical, proofs of such influence.

This particular and specially important influence which I suppose to have taken place is a direct influence from Japan through the Japanese navigation. Whether in ancient Japanese literature evidence is found of voyages so far north as the districts round Bering Strait I do not know. But I consider it most improbable that a highly seafaring people such as the Japanese were, right from the older middle ages to the beginning of the 17th century, should not also have extended their voyages to Bering Strait, where they could carry on fishing, whale hunting and hunting of walrus, and trade such important products as blubber, ivory, and furs.

One sees that the Japanese extended their sea voyages still further in a southern direction. On account of their nautical skill the Japanese were known in the waters of the East as "Kings of the Sea" as F. BRINKLEY<sup>1</sup> expresses himself. But between the years 1614 and 1641 this navigation was destroyed, especially by the Shogun Iyeyasu. "He ordered that all vessels of sea-going capacity should be destroyed, and that no craft should thenceforth be built of sufficient size to venture beyond home waters."

In 1641 Japan was deprived of all craft which could go trading or whale hunting to the regions at Bering Strait. "Not a ship large enough to pass beyond the shadow of the coast may be built."

The Russian expeditions to the Pacific coast only occurred about a century after this period. According to Steller, with the inhabitants of the coast, the Kamchadales for example, they found knowledge of the Japanese, but naturally no direct evidence of this Japanese navigation which had ceased long before and had not been allowed to revive.

Of course the stated argumentation that the Japanese navigation reached the districts at Bering Strait is no proof that the Eskimo culture really was subjected to Japanese influence. Such proof might, I presume, be found in comparing the economic culture of the Eskimo with the economic possession of culture of the old fishermen and sailor population of Japan. It is only this class of the population which may be assumed to have influenced the Eskimo — on the other hand not the higher classes of Japan. But for this, material is still lacking, at any rate I have not access to such.

Meanwhile I can in one respect mention testimony which in a rather obvious and striking manner speaks in favour of the Eskimo having had connection with the Japanese, and that is the anthropological fact that the specially Japanese form of Mongol type so unmistakably occurs

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<sup>1</sup> F. BRINKLEY. Vol. 3, p. 128.

with the Eskimo. Possibly it shows itself in the way in which certain Eskimo populations are stamped by it to a special degree. Thus, I myself have had the opportunity to observe this with the most unmixed Greenlanders on the middlemost part of the west coast (the extreme islands in the districts of Egedesminde and Godhavn).

The fact, however, was long ago observed by several others from different districts, and on the basis of anthropological investigations in Greenland it was first pointed out by the Danish anthropologist, SØREN HANSEN<sup>1</sup>.

My intention is, then, to heed that the most pure Eskimo in Greenland south of Melville Bay, or rather, perhaps, south of the district of Upernivik have a somewhat more "Mongolian" and particularly a more "Japanese" stamp than the Polar Eskimo. These latter made a more "Indian" impression on me, and seemed to remind me strongly of the Eskimo from the Netchillik domain, illustrated by Amundsen. Further west, in Alaska, the Mongolian stamp again seems to be more strongly predominant.

It was by studying the outer structure of the body and specially the proportions of the body that SØREN HANSEN arrived at the mentioned result that the Eskimo were connected with the Japanese. It must be mentioned, however, that CARL M. FÜRST and FR. C. C. HANSEN in their great work "*Crania Groenlandica*" have not been able, on the basis of their craniological material, to demonstrate such a specific connection. On the other hand they have arrived at the result which is not uninteresting to us, "that the Greenland Eskimo cranium is not a cranium of a primitive race, but rather that a part of its marked anthropological characters are secondary, developed as adaptational phenomena in a definite specific functional direction."<sup>2</sup>

I have adduced an historical and an anthropological argument for the fact that Japanese navigation must have reached the Eskimo regions at Bering Strait. Whether absolutely certain proofs can be produced at all, especially at the present moment, is, I think, doubtful. Linguistic proofs can hardly be expected; but one must set one's hope on the ethnographical ones, as previously mentioned, and also on the archæological ones<sup>3</sup>.

At the present moment my theory as to the influence of Japanese navigation on the Eskimo is, therefore, only a hypothesis. But yet I regard the probability as being so great that I do not hesitate to advance it.

I assume, then, that the Palæeskimo culture in the regions at Bering

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<sup>1</sup> SØREN HANSEN, I, p. 194.

<sup>2</sup> FÜRST and HANSEN, p. 225.

<sup>3</sup> It may be mentioned that the idea of Japanese blood being present in the Eskimo is very strongly advocated by A. HAMBERG in his mentioned work.

Strait has been exposed to various cultural influences from without, but that perhaps the most important source of these influences has been the Japanese navigation which probably first reached the mentioned regions well within the centuries of our era, and probably lasted until the beginning of the 17th century. Here, or probably along practically the entire west coast of Alaska — possibly right up to Point Barrow — the Japanese are thought to have carried on whale hunting and trading, they have set up their booths ashore, and have taken the Eskimo coast inhabitants into their service, collaterally with carrying on trade with them.

The result was a mixed race and the Neoeskimo hybrid culture. Hereby must be understood an economic hybrid culture. The Japanese who went to the coast of Alaska have hardly imparted, or have hardly been able to impart, cultural elements of a higher nature. If linguistic matter has been adopted it has certainly taken place in an extremely small degree. The conditions have probably been to some extent parallel to those which we know of in Danish Greenland. In spite of 200 years of missionary work the influence of the Danish language is extremely slight, and the spiritual influence hardly goes beyond purely religious conditions and ideas. If one imagines the Danes to have carried on trade and navigation in Greenland without their being missionaries, one has a parallel to how, as I think, Japanese navigation has influenced the Palæeskimo round Bering Strait, and refashioned them into what I have called Neoeskimo, but which might also, perhaps, be called Mongol-Eskimo. (By the way, the relations between these and the Palæeskimo no doubt correspond somewhat as regards anthropology to the relations between the tribes in North East Asia, for example the Tunguses, who are so strongly stamped by the distinctive Mongol type, and the so called Palæasiatics).

In the mentioned case we would in Danish Greenland have had a Danish-Eskimo hybrid race with an economic culture which had not adopted any great number of essentially Danish or European implements and methods of use, but which, on the other hand, had in several respects allowed itself to be influenced by, or to adopt, some elements for the improvement of their own culture and technique. But if the connection ceased one would at once hardly be able to trace the former presence of Danish influence on language and thought, and after a few generations the memory of this influence would also have disappeared or have been enveloped in obscure legends.

Likewise in Alaska with the Japanese. These can be supposed to have left behind distinct evidence only in the race-character and in the economic culture. On the economic side of the culture the whale hunting and what pertains to it is probably especially in question. Regarding the house structure, it is possible that the rectangular house (the Point Barrow type) arose direct as a borrowing from the Japanese, in that

these erected their booths in a rectangular form like buildings in Japan — but of course this whole idea is only a conjecture. For the rest it is the Eskimo language and way of thinking, the Eskimo dress, and also the Eskimo mode of living in its entirety which has maintained itself in the face of the foreign culture and stamped the new culture with a decidedly Eskimo character.

For the rest I wish to emphasize the fact that I do not assume the Eskimo to have adopted any great number of essential Japanese implements and methods of use. As regards culture, the influence has had more of an inciting character, collaterally with the taking place of interbreeding. Possibly, however, the traces of relatively high technique which one encounters with the western Eskimo, i. e., weaving and pottery, are possibly to be apprehended as originating from the Japanese<sup>1</sup>. The Eskimo metal technique has possibly the same origin. The most common conception is certainly that the Eskimo, when from the North they had reached down to the regions south of the mouth of the Yukon, learnt both weaving and pottery from the North-West Indians; but I am inclined to believe that both Eskimo and North-West Indians have adopted these accomplishments from Asia; that is directly or indirectly from Japan, or perhaps other East Asiatic culture lands.

I have already expressed the view that several possessions of culture of Palæeskimo origin first received their final fashioning in the regions round Bering Strait and under Neoeskimo conditions of culture. Amongst other things I have mentioned that possibly only here in this region has the kayak attained the double paddle and that here, also, an improved form of the dog sledge probably was adopted. None of these improvements, and especially not the last mentioned, can, however, be supposed to have originated from the Japanese, and I state the point in order to emphasize the fact that it must not be supposed that it was only the Japanese sailors who influenced the Eskimo in the Bering territory.

What I suppose to be the case is, that the so-called Neoeskimo culture and population originated around Bering Strait through the influence of various neighbouring peoples, especially of the so-called Pacific Asiatics, and that amongst these latter it is the Japanese seafarers and fishermen who have played the most inciting and refashioning rôle, even if, perhaps, they have not yielded the greatest direct contribution to the improvement of the Neoeskimo technique.

Naturally it ought not to be forgotten that the Eskimo have received some influence from American neighbours, but the really essential in-

<sup>1</sup> With regard to weaving at Point Barrow the reader is referred to MURDOCH I, p. 316. STEFANSSON has lately found most peculiar traces of an old Eskimo pottery as far east as Langton Bay, east of the mouth of the Mackenzie. STEFANSSON, I, pp. 327 sqq.

fluence has come from Asia. How great an extent the supposed acculturation territory, or the domain of direct influence, has had is a great question in itself, which at the present moment cannot possibly be solved.

From this domain the Eskimo culture in its improved and enriched form then extended partly to South Alaska as Subarctic Eskimo culture and partly in a northerly and easterly direction along the coast of the Arctic Ocean along the old Palæskimo paths of distribution, where it had to emphasize the Arctic sides of the economic culture, whereby it had occasion to improve and enrich the Palæskimo culture. In a Subarctic direction, to be sure, an increased impetus together with occupation of new land has taken place on this occasion, but apart from this the Neoeskimo have no doubt only followed old roads, inasmuch as the Palæskimo probably already had occupied, or at any rate visited, all the districts which might harbour an Arctic Eskimo culture. As already stated, the Neoeskimo had easier conditions for their migrations, because they wandered back along known routes. Added to this is, that they had a richer and better economic culture, and also that they no doubt were considerably more numerous. For these reasons one dare assume that their advance took place somewhat quicker than that of the Palæskimo<sup>1</sup>.

When these migrations of the Neoeskimo commenced, how long they lasted, and how many surges started from Alaska, are all questions which cannot be answered with any certainty. A little consideration, however, seems to show us that the Neoeskimo migrations can only have taken place within a fixed and rather limited period. When these migrations began the weak Palæskimo populations along the north-coast of America and the Archipelago could scarcely have formed any barrier to them. Such a barrier was formed, however, as soon as more powerful and numerous Neoeskimo populations arose which were able to preserve their hunting-districts against invaders. Then there was again equilibrium amongst the Eskimo groups, and

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<sup>1</sup> Possibly there are some domains round which the Neoeskimo surge of people has passed. I could imagine this being the case at Southampton Island in Hudson Bay. The peculiar, old fashioned Eskimo culture of this island should therefore be of relatively uninfluenced Palæskimo origin. On the other hand there are matters which indicate that the neighbouring Melville Eskimo are more influenced from the Bering regions than is the case with most of the other central Eskimo; possibly this has some connection with the walrus and whale hunting at the Melville Peninsula. For the rest the Neoeskimo influence in the central districts of the Archipelago seems to have been relatively smaller both as regards culture and anthropology, probably because the Neoeskimo form of economic culture was badly suited to this region. The Neoeskimo from Alaska were whale hunters besides being seal hunters, and the access to whale hunting which is lacking in the central Archipelago probably brought about their wandering, for preference, to more eastern regions, to which they were allured by the access to whale hunting.



the big migrations had to cease, in any case, for a time. This consideration, however, is quite theoretical; we have no definite observations or facts to support it.

Some day, however, a more exact knowledge of the history of East Asia and of Eskimo ethnology and archæology may possibly enable us to decide the moment when the Neoeskimo migrations began. For the present I must assume that Japanese navigation can only have reached Bering Strait about some centuries within our era. The expeditions to Korea which were so inciting for the development of Japan's own culture took place about two centuries after the birth of Christ, and it is probable, I think, that, furthermore, long periods — possibly centuries — passed without Japanese ships reaching Bering Strait and the west coast of Alaska, and some time again before the Neoeskimo culture and population became developed under the effect of this and other influences. We then easily arrive in the second half of the first millenium.

### **Palæeskimo and Neoeskimo Immigration in Greenland.**

One of the few ways in which at the present moment one is able to form any idea as to the period when the Neoeskimo migrations came from Alaska is by trying whether, perhaps, one can draw some conclusions from the history of the old Scandinavians in Greenland, and from their concurrence with the Eskimo.

It is well known that the Scandinavians, as early as the end of the 10th century, found that Eskimo had been travelling along the south-west coast of Greenland. They did not find human beings however, but only remains of their houses and implements. It appears, however, that after this the Scandinavians occasionally met small groups of Eskimo on the south-east coast of Greenland<sup>1</sup>.

In 1266 the Scandinavians met Eskimo on the west coast, north of the "Vesterbygd," and in the following century first the "Vesterbygd" and then the "Eysterbygd" were destroyed by obtruding Eskimo.

Thus it was most natural to assume, as also was generally done, that the Eskimo had come from the north along the west coast of Greenland. Schultz Lorentzen was the first, however, to propound the view that the Eskimo in the southern part of the west coast of Greenland had come from the east coast, south round Cape Farewell. Now THALBITZER<sup>2</sup> has lately subjected the Eskimo myth material containing reminiscences of the old Scandinavians to a methodical investigation, and, as it seems to me, in a convincing way proved that the old Scandinavian "Vesterbygd" in the present district of Godthaab must have

<sup>1</sup> Compare the description of THALBITZER in M. o. G. Vol. 39, p. 691.

<sup>2</sup> M. o. G. Vol. 39, pp. 691 sqq.

been destroyed by Eskimo crowds coming from the north, while the "Eysterbygd" in the present district of Julianehaab was overwhelmed by crowds which came from the east coast.

Admitting the correctness of this as well as of my stated views, there can be no doubt that these Eskimo crowds which advanced both from the north and from the east represent Neoeskimo. The previously found traces of small Eskimo groups might perhaps, on the other hand, be ascribed to Palæeskimo; or they might possibly even be due to Neoeskimo hordes of pioneers.

Yet it seems to me most doubtful whether Palæeskimo can have penetrated down into the Subarctic regions in South Greenland. On the other hand they have no doubt existed on the northern part of the west coast in the district of the present Polar Eskimo and from Melville Bay some further south; the old settlements from the stone age in the interior parts of Disco Bay probably also go back to Palæeskimo times. Likewise it occurs to me that the conditions found in the northern part of the east coast of Greenland by the Danmark Expedition bear witness to the fact that the north east coast was first inhabited by Palæeskimo, and that later, and after a good while had elapsed since the first settlement which was probably extinct, a new settlement of immigrating crowds of Neoeskimo grew up.

The observations made by the ethnographer of the Danmark Expedition, CHR. BENDIX THOSTRUP<sup>1</sup>, on the basis of the condition of the objects of culture and specially on the basis of the condition of the remains of houses speak decidedly in favour of this view. I will quote his observations. "We can distinguish between three different periods of settlement. Between the oldest and the second period, to judge from the ruins, there has been a long stretch of time—several hundred years! But between the second-last and the latest period the difference in age has not been nearly so great." Later he declares that the Eskimo of the third settlement (or third immigration) "can hardly be said to represent an independent, new immigration, because they only include a couple of families."

We have therefore — it seems — in reality two different immigrations to the north-east coast of Greenland. They are distinctive in time, and they appear with a different stamp as regards economic culture. On land the oldest immigrants carried on musk-ox hunting on an extensive scale. The later immigrants have hunted the reindeer, and on the sea, besides seal hunting, they have also carried on whale hunting, which one can conclude partly from Thostrup's observations that they possessed umiaks and partly from the bones of whales and whalebone, and also from their apparatus being made of whalebone. The later immigrants built the small rectangular houses, whereas the

<sup>1</sup> THOSTRUP, pp. 335 sqq.

remains of the houses of the oldest immigrants were evidently so old and decayed that it does not seem as if it has been possible to make sure observations as to their manner and form of building.

One sees that the observations fit in with my theory of a distinction between Palæeskimo and Neoeskimo. I assume the first immigration to have consisted of Palæeskimo people with their Arctic economic culture still bearing a strong impress of the continent. The later immigration has consisted of Neoeskimo who have brought with them their whale hunting technique. The Palæeskimo have gone north of Greenland to the east coast. The Neoeskimo have probably gone both to the north and the south of the country. With their great mobility both at sea and on the ice they have not been so strongly tied to certain geographical localities as the Palæeskimo. Their wanderings have taken place more quickly, and they have resorted to places where there was good whale hunting. For this reason they have probably preferred the east coast to the west coast, and the northern part of the east coast to the southern part.

As to the point of time when this or these Neoeskimo immigrations took place — the immigration may have happened in several divisions though within a definite period — Thostrup was evidently inclined to fix the date too near to the present day. I do not think that — either on account of the condition of the ruins, or by taking into regard the former occurrence of the whales so far north — anything can prevent our assuming that C. THOSTRUP's so called second immigration (i. e., the Neoeskimo) may date from the time before and during the 10th—13th centuries A. D., or from the middle ages, to which period O. SOLBERG, for archæological reasons, dates the settlement on the north-east coast.

In this way we can see a connection between this settlement on the north-east coast of Greenland and the final immigration of the Eskimo to South Greenland and the subsequent annihilation of the "Eyster-bygd." It is an idea already expressed by SOLBERG in his forementioned work<sup>1</sup>. "In einer oder anderer Weise muss die Besiedelung der entlegenen und für die Eskimo nicht sehr produktiven nordöstlichen Küste in Verbindung stehen mit den Völkerverschiebungen, die den Untergang der isländischen Kolonien verursachten."

It is of interest that THALBITZER<sup>2</sup> is opposed to this assumption and says that he "does not understand why SOLBERG is of opinion that the Eskimo colonization on the north-eastern coast of Greenland must necessarily stand in indirect connection with the destruction of the Scandinavian colony on the west coast, ...." THALBITZER naturally thinks of the colonization on the north-east coast of Greenland in its

<sup>1</sup> SOLBERG, p. 56.

<sup>2</sup> M. o. G., Vol. 39, p. 698. Note 3.

entirety since its inception; but SOLBERG, who forms his opinion on the archæological material which he has had at his disposal, really only speaks about what I call the Neoeskimo colonization. The fact of the matter is, no doubt, what THOSTRUP<sup>1</sup> asserts, viz., that for various reasons "the objects brought home to museums by expeditions were almost exclusively of recent date." For this reason SOLBERG had to come to the conclusion that the settlement in North-east Greenland was of comparatively recent date, and to a certain extent was right in this, if one only remembers that a somewhat older colonization of a Palæeskimo nature preceded the colonization which he investigated and spoke about.

The Palæeskimo had a pure stone age culture. On the other hand the Neoeskimo hybrid culture had an East-Asiatic metal culture to build upon, and as the migrations took place comparatively quickly, the knowledge of the metals (copper and iron) carried along from the point of origin in West Alaska did not lapse from memory, so that it was possible to manufacture new implements of metal as soon as some happy opportunity gave access to such material.

This was the case with the native copper from the Coppermine River at Coronation Gulf, and likewise it was the case with the naturally occurring iron in Greenland, and also with the iron which possibly, even in the middle ages, was occasionally obtained from the wrecks of European ships on the east coast of Greenland. SOLBERG has proved that it is inconceivable that the Eskimo should have resorted to the employment of natural iron of bad quality if it were not that they had previously become acquainted with the qualities of wrought iron. But SOLBERG could not explain where the Eskimo had learnt the use of iron, or whence they could have had the form of their implements which they had to express in stone or bone influenced by a metal technique. It seems, however, that he was mostly inclined to assume that the knowledge was a borrowing from the old Scandinavians in Greenland. According to my theory the matter has another and more natural explanation.

Thus it seems that Greenland, even in a remote past — which probably means some few millenniums back — has through immigration from the Archipelago had an ancient population, viz., the, here, so called Palæeskimo. These people of the stone age with the pronounced Arctic Eskimo culture probably did not reach further south than, at the farthest, the innermost parts of Disco Bay on the west coast. How far south they went along the east coast, it is also difficult to decide. Here the Arctic conditions of nature extend somewhat further south, yet one can hardly imagine that the Palæeskimo reached south of the great indentations (Franz Joseph Land and Scoresby Sound). On the other hand according to THOSTRUP the house-ruins of the men-

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<sup>1</sup> THOSTRUP, p. 338.

tioned group have not yet been observed further south than 75° N. Lat. on the east coast. The traces of Eskimo which were found on the south-west coast in the time of Eric the Red ought, then, to be accounted to the Neoeskimo<sup>1</sup> who went south round Greenland to the east coast, whither they were allured by the whale hunting, or where they possibly retired under the influence of the immigrating Scandinavians in South-western Greenland.

To this must be added the question of the consequential change in the climate. On the basis of investigations, the correctness of which I shall not try to decide, O. PETTERSON has recently propounded the view that Greenland, about 1000 A. D., for a period enjoyed better climatic conditions with a somewhat higher total temperature, without the masses of "Storis" along the east and south coasts such as are now known. This more favourable climate, then, benefited South Greenland; and the district round the Eysterbygd ought, then, particularly to have had a temperate climate. This mild period should have brought about the retirement of the Eskimo to more northern districts; but when in the 13th—14th centuries, the climate again deteriorated, the Eskimo advanced once more.

Whatever may have been the conditions of this, possibly, milder period and of the supposed cessation of the "Storis" during the first centuries of the Scandinavian colonization, I believe, in any case, that the Eskimo advances into South Greenland, and especially the great

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<sup>1</sup> One is tempted to ask whether they were Palæeskimo or Neoeskimo, whom the Scandinavians met with on the American coast on their Vineland journey. The whole of this coincidence is so obscure, however, that one is wise in not dragging it into the investigation. To this must be added that, from a literary point of view, the report has possibly been garbled by the admixture of irrelevant details, in that European incentive has possibly intermingled with the Saga poetry. As a result of America having been confounded with Western Europe such an admixture is supposed, for example, to be contained in Erik's Saga, where there is a report of the two Skrälings captured in Markland: "They declared, further, that another land lay on the other side right opposite their own where the people were dressed in white clothes and carried poles, with small pieces of skin (?) attached to them, and shouted loudly." (The translation is from W. THALBITZER, Four Skräling words from Markland (Newfoundland) in the Saga of Erik the Red; Proceedings of the XVIIIth Internat. Congress of Americanists). I shall not express an opinion about what must really be understood by Markland, or whether — provided the mentioned Skrälings really were Eskimo — one can find people within the sphere of contact with the Eskimo to whom the strange description of the white clothes and the laps of skin on poles might possibly apply. The information from the Saga that the Skrälings came in a great quantity of boats — "row after row while from all the boats poles were swung," gives one the impression that they must have been Neoeskimo, as the description seems to fit in with kayak paddlers with double paddles, but, as stated, the problems are here too many and too difficult to allow of my doing more than to call attention to one or two of them.

advances in the 14th century, must be explained with a backward view to the special development in the economic culture of the Eskimo which had taken place in the districts round Bering Strait, and had gradually extended to more eastern regions. Several crowds of these Neoeskimo have possibly reached Greenland from the Archipelago. Some of them have gone round the northern point of Greenland and down along the east coast, while others have gone south across Melville Bay. Some even seem to have come right down to the southern point, and further north along the east coast, even before the Scandinavian colonization began. That there must have been a certain connection between the west and east coasts of Greenland seems to be evident from certain cultural congruities which, here, however, I shall not enter upon.

As, then, the Vesterbygd and Eysterbygd were colonized by the Scandinavians, the presence of these has surely at one time had the effect of restraining and stopping the Eskimo wanderings. But later on a certain connection was, possibly, established between the two peoples; at any rate the wanderings were reassumed. It seems to have happened as in the case of water which has been dammed up, in that it broke forth with renewed strength. The Eskimo advanced from north to south along both the west and the east coasts. Originally this advance was, no doubt, peaceful; but, as is well known, it led to hostilities, and, finally, to the destruction of the colonization of the Scandinavians. It is very difficult to say anything definite about what has been the real driving factor in the advances. One is probably correct in assuming that fresh Neoeskimo crowds immigrating into North-east and North-west Greenland started the movement.

From this presentment of the immigration of the Eskimo into Greenland one gets, in addition, an explanation of why the Eskimo type in the more southern districts of Greenland seems to be the most Mongolian. The explanation of the matter is, I think, that these Eskimo represent Alaskan Neoeskimo. But as the source of the Neoeskimo people in Alaska ceased to flow, or at least ceased to be the overwhelming influence, then it was again the Arctic Archipelago, or the region north of the Barren Ground Peninsula, which proved to be the most important centre for Eskimo culture, from where new cultural elements spread towards the east, the west, and the north-east, and whence new small groups of Eskimo wandered northwards to Greenland, along the musk-ox route. Some of these left the stamp of a more Indian type on the Polar Eskimo and the most northern West Greenlanders. Others went down along the east coast, and to them may probably be accounted the "third immigration" of the Danmark Expedition, as also the small group which in 1823 was met with on Clavering Island. Probably some of these groups have reached right down to Angmagalik.

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(In the present list of literature only such works are given as have been directly consulted while writing this paper. But as regards Greenland all such works are not mentioned. Concerning Greenland the reader is referred to the previous works of the author; reference can also be made to different bibliographies in M. o. G., for example to THALBITZER's in M. o. G., Vol. 39, pp. 733—741. A Comprehensive bibliography is also found in CARL M. FÜRST and FR. C. C. HANSEN'S *Crania Groenlandica*, pp. 27—39 and pp. 233—234).

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TABLE  
WITH TYPES OF ESKIMO HOUSES  
AND  
MAP  
OF THE ESKIMO TERRITORY

## EXPLANATION OF TABLE.

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- Fig. 1. Ground plan and vertical section of winter house from Point Barrow (after MURDOCH).
- 2. Ground plan and vertical section of winter house of the Polar Eskimo (M. o. G., Vol. 34, pp. 312—13).
- 3. Ground plan and vertical section of reconstructed winter house from Scoresby Sound (after RYDER).
- 4. Vertical section of winter house from Angmagsalik (after G. HOLM).
- 5. Ground plan of winter house in the Mackenzie region (after MURDOCH).
- 6. Ground plan of house of the Gilyaks (after SCHRENK).
- a* pillar; *b* entrance; *c* house passage; *d* door; *e* platform; *f* corner innermost in the house, without platform; *g* fire place.
-

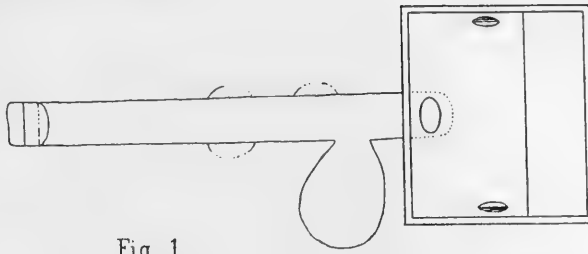


Fig. 1.

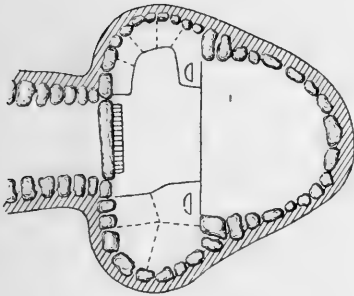


Fig. 2.

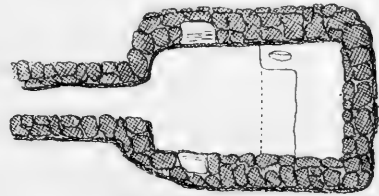
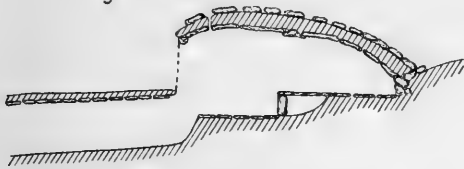


Fig. 3.

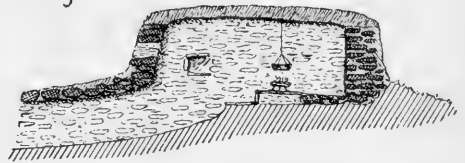


Fig. 4.

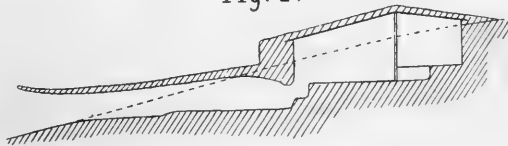


Fig. 5.

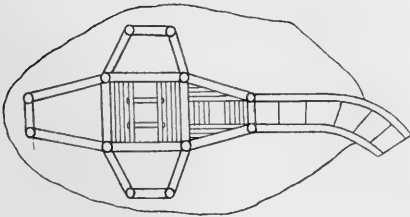
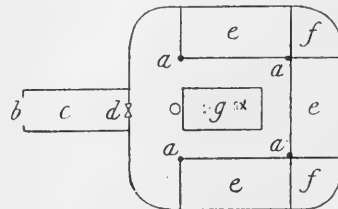
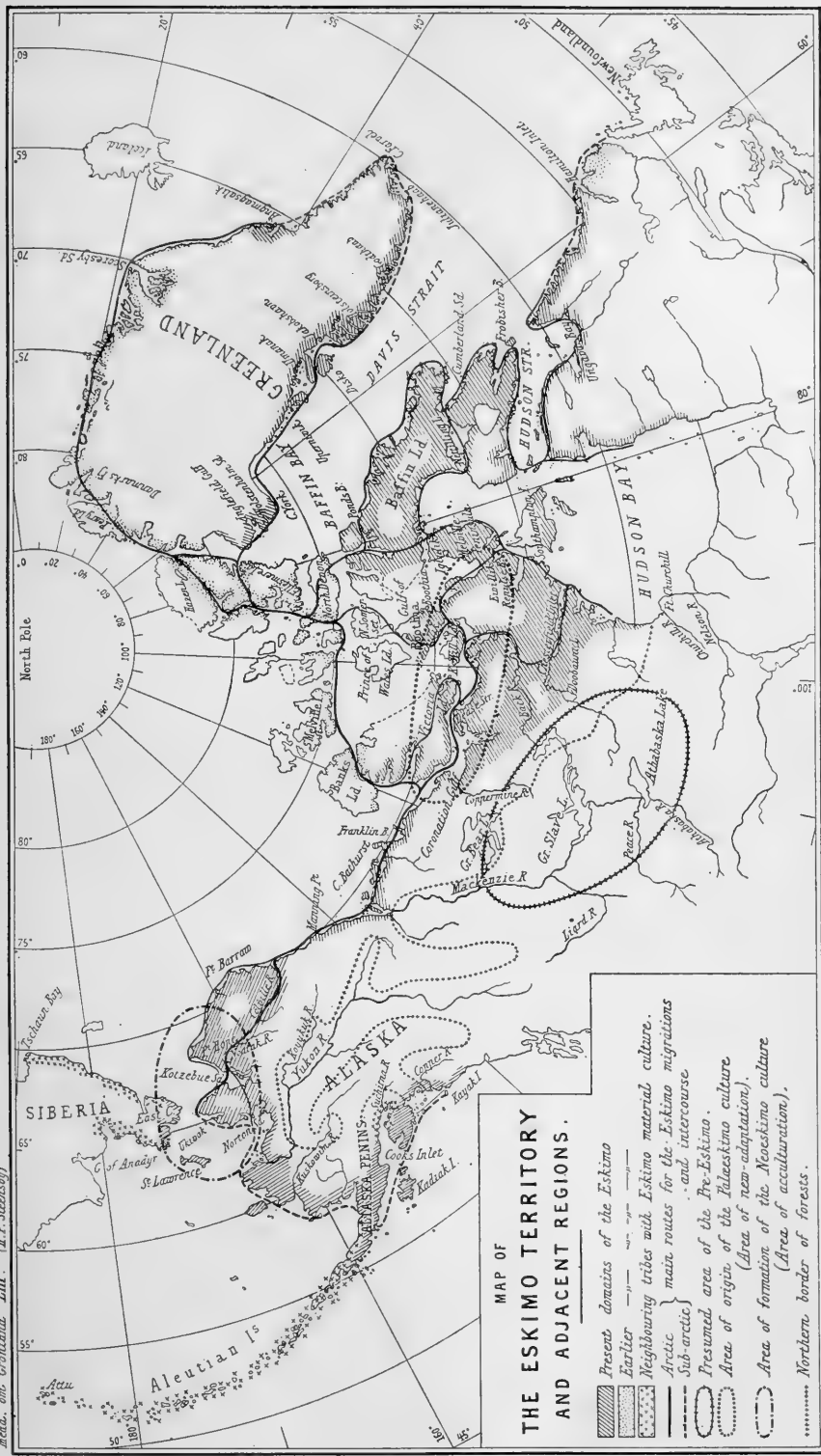


Fig. 6









III.

ZOOGEOGRAPHICAL INVESTIGATION OF  
CERTAIN FJORDS IN SOUTHERN GREENLAND,  
WITH SPECIAL REFERENCE TO CRUSTACEA,  
PYCNOGONIDA AND ECHINODERMATA

INCLUDING A LIST OF ALCYONARIA AND PISCES

BY

K. STEPHENSEN





THE present work is intended to furnish a survey of the zoogeographical conditions in certain fjords of Southern Greenland, based upon their fauna of Crustacea, Pycnogonida and Echinodermata.

The material was collected during the summer of 1912 with the aid of the motor boat "Rink", belonging to the Committee for Geological and Geographical Investigations in Greenland, under the supervision of the present writer. In the previous year (1911) Dr. V. NORDMANN had been sent out by the Committee to investigate the fauna of Northern Strømfjord (W. Greenland, abt. Lat.  $67\frac{1}{2}^{\circ}$  N.), this fjord being taken as the type of the Greenland fjords, where the temperature of the bottom water is negative, and all animal life consequently of arctic, or at least boreo-arctic character, without true Atlantic (boreal) deep sea species. My work on the Crustacea and Pycnogonida from this expedition is published in Medd. om Grønland vol. 51, 1913, p. 53—77.

In contrast to this, the "Tjalfe" expedition of 1908—09 had shown, that in some of the fjords of southern Greenland, south of the ridge running across Davis Straits at abt.  $66^{\circ}$  N. lat., there was free access for the bottom water of the Atlantic, save in cases where the mouth of the fjord itself was barred by a submarine ridge. As a result of these conditions, a remarkable phenomenon was here encountered, viz; that while the upper water layers were found to contain the usual arctic or boreo-arctic littoral fauna, search deeper down revealed the presence of Atlantic (boreal) deep sea forms.

As types of such "Atlantic" fjords were chosen: the Kvanefjord, near Frederikshaab (abt.  $62^{\circ}$  N.) and Bredefjord, between Julianehaab and Ivigtut (abt.  $61^{\circ}$  N.).

An extract from my instructions (the passages here quoted drawn up by the leader of the "Tjalfe" expedition, Museumsinspector Ad. S. Jensen) will give a good idea as to the nature of the task in question.

"In the course of the investigations made last year in Northern Strømfjord it was found, that the deeper water layers of this fjord were characterised by a remarkably low temperature, constantly below  $0^{\circ}$  C. And the dredgings carried out by Dr. NORDMANN furnished an excellent view of the fauna peculiar to a fjord of this character.

"The "Tjalfe" expedition of 1909 encountered, in certain fjords of western Greenland, entirely different conditions. Close to the surface, there was the same typical cold surface layer of the polar current, with minimal, negative temperature at abt. 50—100 metres depth; below this, however, from 300—500 metres, was a thick layer with temperature from  $2^{\circ}$  to  $3,3^{\circ}$  C., and fairly high salinity (over 34 ‰). We have thus, in these fjords, a water layer entirely similar in character to that which is found off the coast beneath the polar current, and which fills the whole of the deeper portions of Davis Strait. The reason of this doubtless lies in the fact that the mouths of these fjords are so deep as to permit direct inflow of the warm lower layer from the Davis Strait.

"It would thus be an interesting task for a zoologist to investigate the fauna of these fjords, the hydrographical conditions of which are so distinctly opposed to those found in most of the Greenland fjords, of which Northern Strømfjord may be taken as the type. There is little room for doubt that the deeper portions, with their high temperature and salinity, have a different fauna, and a comparison of this with the corresponding deep-water fauna of Northern Strømfjord should lead to interesting results, as regards the influence exerted by hydrographical conditions on the composition of the fauna. The deeper region of the Davis Strait has, it will be remembered, been investigated by several expeditions ("Fylla", "Ingolf" etc.); its ramifications, however, into certain fjords of southern Greenland, present a field hitherto entirely untouched, at least as regards the lower animal life; the "Tjalfe" expedition having been exclusively concerned with hydrographical conditions, and the distribution of the larger species of fish. Investigation of the shallower parts of the same fjords, covered as they are by polar water, will presumably reveal a fauna of the usual arctic type.

"Two fjords which would appear particularly suited to investigations of this nature are the Kvanefjord, south of Frederikshaab, and Bredefjord, north of Julianehaab. On account of the ice, Kvanefjord should be taken first, as the channel of Torsukatak, leading to Bredefjord, will hardly be navigable before the commencement of July.

"The work in Kvanefjord could probably be commenced in June, or possibly even earlier. The great depths, down to 500 metres, with the "warm" water, extend far in, almost to the base of the fjord; in 1909, a temperature of  $3,07^{\circ}$  C. was noted at 500 metres depth, four miles from the glacier there.

"Bredefjord is deepest in its western part, where in places as much as 700 m. of water may be found; the warm bottom water, however, extends throughout the whole of the fjord, and into the adjacent fjords of Tunugdliarfik and Skovfjord. This extended system of fjords should furnish more than sufficient work to occupy the months of July and August possibly also September."

The expedition consisted, besides the present writer, of a young

naturalist and ethnographer, stud. mag. K. BIRKET-SMITH, and Baadmand N. PETERSEN, of the Danish Navy. To the last-named in particular, a very large share of the credit for the good results obtained is due, as the experience of four previous expeditions rendered him familiar to a unique degree with the navigation of Greenland fjords, where ice and hidden reefs make investigations of this nature considerably more difficult than in most other parts of the world.

### **Bredøfjord (Ikarsuak) and adjacent fjords.**

(St. 29—156.)

The mouth of Bredøfjord lies at  $60^{\circ}45'$  N., the fjord itself extending up some 30 miles inland, towards the north-east, and continuing, as the Sermilik, for about half that distance. Some 6 miles south of Bredøfjord, and separated from it by a range of large islands, of which Tugtutok (Reindeer Island) is the largest, lies Skovfjord (Nardlunak). Skovfjord is almost as large as Bredøfjord itself; its continuation landward is the Tunugdliarfik (the Eriksfjord of the Norsemen). The investigation of this system of fjords occupied the two months from 15. July to 15. September.

Bredøfjord is on an average 2—3 miles across; the inner portion, however, is considerably broader, being divided up into a number of small branches running right up to the glaciers of the inland ice. The inner end of Sermilik has 5 branches, of which 3 with glaciers; a single glacier runs out into Tunugdliarfik.

The coasts of Bredøfjord and Skovfjord with the interjacent islands are for the most part low, rising however, in places to considerable heights, as for instance at the north-east corner of Tugtutok, and the southern side of Sermilik (Ilimausak), which rise steeply from the water, as also in parts of the small branch fjords on the north side of Bredøfjord.

The coast formation is thus suggestive of shallow water; in spite of this, however, considerable depths are found. At St. 130, for instance, the dredge was sent down with 800 metres of line out, without reaching bottom.

It is interesting to note the depths at the mouth of the fjord, these being such as to offer unhindered access to the Atlantic water. The following depths were noted midway out in the mouth of Bredøfjord:  $> 550$  m. (St. 30);  $> 550$  m. (St. 34); 700 m. (St. 121).

At the mouth of Skovfjord, 400 m. was noted at St. 155, while St. 154 showed only 270 m. and St. 156, which lies, it is true, not far from a small island, 70—140 m. In the southern arm of Skovfjord (south of the island of Kangue) considerable depths are found off the perpendicular rock of Alangarsuak (St. 137, 280 m. St. 144, 250—300 m. St. 146, 305—310 m.); in the northern branch, however, between Tugtutok and Kangue, the depths are very slight (St. 145, 10—35 m.). With regard to Skovfjord as a whole, it was found, as will be seen from the following, that while the depth at the mouth is sufficient to permit a

certain, though not altogether free inflow of Atlantic water, the true deep-water fauna of the Atlantic does not penetrate into the fjord. (The deepest station — St. 155 — showed a temperature of only  $2,8^{\circ}$  at 400 m. while in Bredefjord, this figure is reached at a depth of only 200 m.).

### Kvanefjord.

(St. 1—28.)

The mouth of Kvanefjord (Kuanersok) is situated a little to the south of Frederikshaab, at abt.  $61^{\circ}55' N.$ ; the fjord extending inland for some 25 miles in a north-easterly direction. It is from 3—4 miles across, and has four branches; one going almost due north, and forming the eastern boundary of the peninsula upon which Frederikshaab is built; at the base of this arm lies the rocky height of Istivigit (2035 ft.). The three remaining arms are situated right up at the base of the fjord; two end in glaciers, that of the third being extinct.

The mouth of the fjord is full of small islets, and a little farther in lies Kvanø, an island of some size. In contrast to Bredefjord, Kvanefjord is a water of the true fjord type, its sides being for the most part high and steep, resembling to a remarkable degree several of the fjords on the west coast of Norway.

The greatest depth noted was at St. 18, where the dredge was out with 700 metres of wire without reaching bottom.

There are two caplin stations, where the inhabitants of Frederikshaab and Kvanø move out at the beginning of June to fish for caplin (*Mallotus arcticus*), the fish being dried and preserved for winter use.

Despite the belt of islands which bar the mouth of the fjord, the warm Atlantic water is nevertheless found to penetrate in, so that there must be in places at least, very deep portions between the islets at the mouth. This is indicated both by the results of hydrographical investigations and by measurements of depth; at St. 27, for instance, in the island belt itself, the NANSEN-net was down to 300 m. without reaching bottom; St. 11 shows 290—320 m., St. 12 no less than 290—400 m.

The depth is thus sufficient to permit inflow of Atlantic water (*vide* hydrography St. 17, inner side of Kvanø; as already mentioned, the "Tjalfe" expedition records a temperature of  $3,07^{\circ} C.$  at a depth of 500 m. four miles from the glacier at the base of the fjord). And the figures moreover, do not differ very greatly from those at the mouth of Bredefjord. Evidently, however, the depth is yet not such as to allow free ingress to the true Atlantic fauna; at any rate, not a single true Atlantic form belonging to any of the groups here treated was found in the fjord.

The fjords investigated are waters of classic fame. Kvanefjord lies, as stated above, close to Frederikshaab, where the author of "Fauna

Groenlandica", OTTO FABRICIUS, was chaplain from 1768—74, and it may be taken for granted that a great number of the species mentioned by him were taken in Kvanefjord itself. It is interesting to note that two of the species brought home by the "Rink" expedition; viz.; *Coronula diadema* and *Pycnogonum littorale*, have not been recorded from Greenland throughout the 135 years which have elapsed since the publication of FABRICIUS' work in 1780.

Classic in another sense are the waters of the Bredefjord system; they formed the centre of the old Norse settlement of Østerbygd. Erik the Red himself lived on the coast of Tunugdliarfik (Eriksfjord).

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The implements used were: dredge (fine and coarse), plankton-net, (silk), NANSEN'S closing net, and ringtrawl. The method of operation was so contrived that hardly any layer of water from the bottom to surface could escape investigation, save for the greatest depths (> abt. 800—900 m.), which unfortunately were found to exceed considerably what had been expected. The motor boat was only equipped for work at a maximum depth of 500 m. and we had therefore only 550 metres of wire on board for the water bottle and reversing thermometer, so that we were unable to measure temperature and salinity at depths beyond this.

For the dredge, on the other hand, we had two lengths of wire, each 1000 metres, the one length, however, being left on shore in reserve, as there was not room for both on board, nor was it expected that the boat would be capable of hauling the dredge at depths of more than 500 m. In point of fact, however, as will be seen from the Report of the Expedition, we had frequently 900 metres of wire out; on one occasion even this did not suffice to reach bottom.

Save in a very few instances, the entire catch made at each haul was preserved, the specimens discarded being for the most part of large and easily recognisable species, the occurrence of which was always duly noted in the Journal. The hauls were also, as a rule, of uniform duration (20 min.), at any rate as regards the ringtrawl, so that the material may to a certain extent be used for quantitative determination.

A dredge made of stramin (the same material as that used for the bag of the ringtrawl) proved extremely useful in shallow water (up to about 35 m.). The catch made with this implement in the algae belt was enormous. On being drawn in, the whole content was emptied out into several buckets of water, algae leaves and stones removed, these being, however, carefully rinsed so that no animal forms should be thrown away with them; leaves of algae with animals attached (e. g. *Hydroidea*) we of course always preserved. The content of a bucket was then filtered through a plankton-net, to drain off the water, and the residue placed in glass jars and covered with spirit. In this manner, the whole yield of a dredge haul can be dealt with in the course of half an hour, without losing any portion of the material. This explains the

extraordinarily large quantities of certain *Amphipoda*, especially *Pontogeneia inermis* and *Paramphithoë bicuspis*, with other rare species from the weed belt.

The content of the ringtrawl was dealt with in a similar manner, except at St. 28, where we had not yet hit upon the method; the advantage thereby gained may readily be seen on comparing the results from this station with these of the other ringtrawl hauls.

From time to time, also, as opportunity offered, investigations were made in such fresh water as lay near to the actual field of work, though this formed no part of the plan laid down for the expedition. Very little is hitherto known as to the fresh-water fauna of Greenland, and the collections thus made also include one (two) new species, viz.; *Gammarus Zaddachi* and *Diaptomus castor*.

The present work includes the material of *Crustacea* and *Pycnogonida* (determined by the author), *Echinodermata* (determined by Dr. TH. MORTENSEN), *Alcyonaria* (determined by Prof., Dr. H. JUNGENSEN) and *Pisces* (determined by Museumsinspector AD. S. JENSEN). The two last-named groups, however, are not included in the geographical survey; the Alcyonaria, owing to the fact that the list did not come to hand until the present manuscript was almost completed, and Pisces, on account of the paucity of the material, from which no results of importance could be obtained. The expedition, it should be noted, was not equipped for the collection of fish. *Vermes* are at present being dealt with by Mag. sc. HJ. DITLEVSEN, and *Mollusca* by Museumsinspector AD. S. JENSEN; the results in both these cases will be published in the report of the "Ingolf" expedition. I hope, however, later on to give a list of the material from the "Rink" based on the manuscript of these two writers.

Two works dealing in part with results of the expedition have already been published; viz. a couple of papers by Dr. TH. MORTENSEN on the Echinodermata (*vide* the systematic portion), in addition to which, the voyage furnished opportunities of acquiring information in another field, quite apart from zoology, to wit, the study of old Norse ruins, new or little known, which forms the subject of a small work by the present writer (Medd. om Grønland, vol. 51, Nr. 3, 1913, p. 79—101). The fjords about Bredefjord belong, as already mentioned, to the old Norse colony of Østerbygd, Tunugdliarfik, or Eriksfjord, being the very place where Erik the Red and his fellow-settlers first took up land, and considerable remains of his building are still to be seen. A large amount of ethnographical material was collected here by stud. mag. K. BIRKET-SMITH, who has published a survey of the same in Medd. om Grønland, vol. 53, 1, 1915 ("Foreløbigt Bidrag til Kap Farvel-Distrikternes Kulturhistorie, paa Grundlag af en nyopdaget Ruingruppe i Julianehaabdistrikt"). Excavations were also made in some old Eskimo burial places, resulting in the finds of several crania and other skeletal

parts, since handed over to the Normal-anatomical Museum, which institution, as well as the Danish Collection and the Ethnographical Museum, has taken copies of the fairly large collection of photographs procured, representing Eskimo graves, old Norse ruins and adjacent grounds, and ethnographical subjects.

The expedition brought home in all 132 species of Crustacea, 8 (10) species of Pycnogonida, and 37 species of Echinodermata. With regard to the Copepoda, however, only character forms were determined (*vide infra*). These figures are far in advance of those from any other Greenland expedition working within a restricted area. The Danmark expedition to North-east Greenland procured only 80 species of Crustacea, 5 of Pycnogonida, and 26 of Echinodermata. Dr. NORDMANN's expedition to Northern Strømfjord (W. Greenland, abt. 67° 45' N.) obtained 67 species of Crustacea, 3 of Pycnogonida, and 23 of Echinodermata. In other words, the present expedition has taken over one-fifth of Greenland's Crustacea (132 out of a total 585) one-fourth of its Pycnogonida (8 or 10 of a total 34) and two-fifths of its Echinodermata (37 of a total 88). These rich results are due to a combination of circumstances, among which should be reckoned the extensive fauna of the waters investigated, and the extremely favourable weather there encountered, with a consequent high proportion of working days. In addition, I have to thank my two companions for the zeal and energy which they devoted to the work.

Within the animal groups mentioned in the present work (excl. fish) the "Rink" material includes 4 species new to science, viz.:

- 72.<sup>1</sup> *Halirages bispinosus*,
- 90. *Caprella Rinkii*,
- 150. *Pteraster hastatus*,
- 182. *Stenogorgia borealis*,

with the following 13 species new for Greenland:

- 5b. *Munida* (*Bamffica*?, larva),
- 39. *Scina borealis*,
- ?43. *Pseudalibrotus Nanseni*,
- 78. *Gammarus Zaddachi*,
- 97. *Eurycope producta*,
- 102. *Podon Leuckartii*,
- 116. *Diaptomus castor*,
- 127. *Scalpellum Stroemii*,
- 142. *Hathrometra Sarsii*,
- 152. *Poraniomorpha hispida*,

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<sup>1</sup> The figures denote number in the list of species following.

- 153. *Astrogonium Parelîi*.
- 177. *Psolus valvatus*,
- 181. *Primnoa resedaeformis*.

And the following hitherto unknown developmental stages of Decapoda:

- 3. *Hyas coarctatus*, 3. Zoea,
- 5. *Munida* (*Bamffica*?) larva,
- 8. *Nectocrangon* lar, young stage,
- 10. *Sabinea septemcarinata*, young stage,
- Spirontocaris larva 1: *Sp. polaris*?
- — 2: *Sp. turgida*?
- — 3: *Sp. Fabricii*?
- — 4—5.,
- (Fabricii?) juv.,
- sp. juv.,
- 22. *Pasiphaë tarda*, larva in intermediate stage.

In a large number of cases, the locality of the find is of peculiar interest; most of the following species, for instance, have not hitherto been recorded from this part of Greenland.

#### Crustacea and Pycnogonida.

- 1. *Chionoecetes Phalangium*, not hitherto found S. of the ridge.
- 9. *Sabinea Sarsii*, not found S. of 65½° N.
- 19. *Spirontocaris microceros*, hitherto taken at 5 places only.
- 27. *Boreomysis arctica*, unexpectedly found to be of so frequent occurrence in the deeper parts of Bredefjord, that it must be classed as a character from.
- ?46. *Orchomenella pinguis*, found only in N. Strømfjord.
- ?47. *Tryphosa nanoides*, found only at Sukkertoppen and Upernivik.
- 50. *Amphilochus manudens*, found in two places only.
- 51. *Metopa groenlandica* = *Stenothoë* (*Proboloides*) *clypeata*, hitherto from 3 places only.
- 52. — *longimana*, hitherto from 2 places only.
- 53. — *neglecta*, hitherto from 2 places only.
- 55. — *sinuata*, hitherto from Godthaab only.
- 62. *Paramphithoë Boeckii*, hitherto from 4 places only.
- 64. — *assimilis*, hitherto from 2 places only.
- 67. *Odius carinatus*, hitherto from 3 (4) places only.
- 74. *Calliopius Rathkei*, hitherto once only.
- 76. *Rhachotropis inflata*, not found S. of 68½° N.
- 80. *Ampelisca Eschrichtii*, not found S. of Godthaab.
- 81. — *macrocephala*, do.



82. *Haploops tubicola*, not found S. of 65° N.
85. *Neohela monstrosa*, not found S. of Umanakfjord.
87. *Dulichia tuberculata*, not found S. of 65½° N.
88. *Aeginella spinosa*, only 65½° N. and 68° N.
91. *Calathura brachiata*, not found S. of the ridge.
93. *Aega ventrosa*, 2 places only.
94. *Ianira maculosa*, only 66½° N. and 72½° N.
98. *Phryxus abdominalis*, not hitherto found on Spiront. groenlandica.
99. *Bopyroides hippolytes*, not hitherto found on Spiront. Lilljeborgii.
120. *Euchaeta norvegica*, hitherto only from Lille Karajakfjord.
121. *Crypsidomus Terebellae*, not S. of Sukkertoppen.
- ?122. *Saccopsis Terebellidis*, only from Egedesminde.
123. *Herpyllobius arcticus*, only from Ritenbenk and Umanak.
127. *Philomedes brenda*, not S. of Holstensborg (ca. 67° N.).
132. *Sylon Hippolytes* was found to be of very frequent occurrence, but only on *Spirontocaris Fabricii*, where it has not hitherto been found.
131. *Coronula diadema* and
133. *Pycnogonum littorale* have not been recorded from Greenland since FABRICIUS' mention of them in *Fauna Groenlandica* 1780.
134. *Phoxichilidium femoratum*, hitherto only known from Greenland locality not stated.
136. *Nymphon grossipes*, not S. of 66½° N.

#### **Echinodermata.**

146. *Pedicellaster typicus*, hitherto only from 66½° N.
151. *Poraniomorpha tumida*, only Umanakfjord.
160. *Amphiura denticulata*, only 64—64½° N.
162. *Ophiacantha anomala*, only 64—65° N.
163. *Ophiolebes claviger*, hitherto only W. Greenland (no locality).
164. *Ophioscolex glacialis*, hitherto only 66½° and 71° N.
165. *Gorgonocephalus Lamarckii*, hitherto only 64½—65½° N.
169. *Eupyrigus scaber*, only Arsuk (61° N.).
171. *Laetmogone violacea*, only 63°17' N.

#### **Alcyonaria.**

180. *Eunephthya florida*, hitherto only from 2 places in E. Greenl.

#### **Number of Greenland's Crustacea and Pycnogonida.**

In the "Conspectus" of 1913, mention is made of 563 species of Crustacea and 34 Pycnogonida from Greenland, while in the same work, p. 423—424, 10 new species are noted. *Lepas anatifera*, however, should

not as a matter of fact be stated as new for Greenland, having then already been recorded from Egedesminde, W. Greenland, by H. J. HANSEN (Cladoc. u. Cirriped. d. Plankton-Exped., vol. 2, G. d. 1899, p. 15).

Another species mentioned in the Conspectus, viz.; *Ianthe Libbeyi* (Consp. Nr. 243, p. 298) should also be erased, this form being synonymous with *Ianira tricornis* (verbal communication from Dr. H. J. HANSEN).

A. R. MOLANDER has, in Arkiv f. Zoologi, vol. 9, Nr. 6, 1914, p. 1, Pl. 1, fig. 1, set up a new Greenland species, *Spirontocaris recurvirostris* n. sp., which is, however, as far as I can see, no other than *Sp. Gaimardi Belcheri* Bell (*vide* Nr. 13 of present work).

GUNNER ALM has, in Arkiv f. Zoologi, vol. 9, Nr. 5, 1914, recorded 4 new Ostracoda from Greenland (*vide* Nr. 124 of present work). With the 9 new species from the "Rink", the fauna of Greenland thus numbers at present 585 known Crustacea and 34 Pycnogonida. We have still, however, to reckon with the material from the "Ingolf" Expedition, now being treated, as regards the Isopoda, by Dr. H. J. HANSEN, and the Copepoda by Mag. sc. C. WITH, both of which groups will show a very considerable further increase.

With regard to the zoogeographical importance of the "Rink" material, the reader is referred to the special section of the present work.

## LIST OF THE SPECIES.

× indicates new for Greenland. ×× new to science.

### CRUSTACEA.

For literature of the species belonging to this group *vide* my work; Grønlands Krebsdyr og Pycnogonider (Conspectus Crustaceorum et Pycnogonidorum Groenlandiae; Medd. om Grøn., vol. 22, 1913) where all information as to distribution etc. will be found.

### MALACOSTRACA.

#### Decapoda.

##### 1. *Chionocetes Phalangium* O. Fabr.

Conspectus p. 1.

Kvanefjord St. 5, 420 m., 1 spec.; St. 25, 115 m., 1 spec. — Bredefjord St. 70, 225—290 m., 1 spec. — Skovfjord St. 143, 65—90 m., 1 spec.

Not hitherto known from W. Greenland S. of 66°35' N.

2. *Hyas araneus* L.

Conspectus p. 2, 424.

Kvanefjord St. 13, 34—40 m.; 1 spec., 75 mm., ♂.

Not hitherto known from W. Greenland S. of Godthaab (64°11' N.).

3. *Hyas coarctatus* Leach.

Conspectus p. 3, 424.

## A. The adult stage.

Kvanefjord St. 2, 17—19 m., 1 spec.; St. 4, 20,5—34 m., 8 spec.; St. 6, 37—45 m., 3 spec.; St. 9, 22—24 m., 4 spec.; St. 10, 19,5—54 (?) m., about 10 spec., and 12—14 m., among algae, 5 spec.; St. 13, 34—40 m., 5 spec.; St. 25, 115 m., 1 spec. — Bredefjord St. 32, 35—37 m., about 10 spec.; St. 36, 29—100 m., 2 spec.; St. 37, 20—30 m., about 10 spec.; St. 40, 170—180 m., 1 spec.; St. 46, 20—30 m., 5 spec.; St. 48, about 10 spec.; St. 78, 30—50 m., 5 spec.; St. 79, 30—50 m., several; St. 88, 40—70 m., about 10 spec.; St. 89, 16—17 m., 1 spec.; St. 92, 50—90 m., 1 spec.; St. 103, 90—100 m., 1 spec.; St. 134, 85—140 m., 1 spec. — Tunugdliarfik St. 141, 35—70 m., 1 spec.; St. 142, 14—18 m., 4 spec. — Skovfjord St. 145, 10—35 m., 1 spec.; St. 151, 58—60 m., 1 spec.; St. 152, 80—120 m., about 15 spec.; St. 156, 70—140 m., about 15 spec. — Julianehaab, the harbour, 8—10 m., among algae, 2 spec.

This species is thus of very common occurrence throughout the whole of the area investigated; it is, however, apparently not found up in the Sermilik of Bredefjord. It is particularly frequent from some few metres depth down to abt. 100 m.; some species have however, been taken lower down; (St. 25, 115 m.; St. 40, 170—180 m.; St. 103, 90—100 m.; St. 134, 85—140 m.; St. 152, 80—120 m.).

Most of the specimens are small, about (10—) 30 mm., only a very few being from 50—60—70 mm. One or two of the specimens were just changing or had recently changed their shell. (St. 13, 88).

This species has been previously found in W. Greenland from Julianehaab to Hareø (abt. 70°25' N.).

## B. The larva (Fig. 1).

Kvanefjord St. 19, surface, about 15 spec. (1. Zoea); St. 27, Nansen-net, 50—25 m., about 15 spec. (1. Zoea); St. 28, ring-trawl, 400 m. w., about 35 spec. (1. Zoea). — Bredefjord St. 31, ring-trawl, 700 m. w., 5 spec. (1. Zoea); St. 50, ringtrawl, 100 m. w., 2 spec. (1. Zoea); St. 59, ringtrawl, 300 m. w., 1 spec. (1. Zoea); St. 84, ringtrawl, 200 m. w., 2 spec. (1. Zoea); St. 86, ringtrawl, 100 m. w., about 10 spec. (1. Zoea); St. 94, Nansen-net, 25—10 m., 5 spec. (1. Zoea); St. 100, ringtrawl, 500 m. w., 1 spec. (1. Zoea); St. 102, ringtrawl, 400 m. w., 1 spec. (1. Zoea); St. 106, ringtrawl, 100 m. w., about

10 spec. (1. Zoea); St. 126, ringtrawl, 800 m. w., 1 spec. (3. Zoea). — Skovfjord, St. 147, surface, 1 spec. (3. Zoea).

The above list shows, that Zoea is found at several different places and in widely different depths.

There are only two stages represented in the material, viz.: one entirely without pleopoda, and one with fairly large, but entirely inarticulate do.

The youngest stage I have described in the "Tjalfe" expedition, p. 127, fig 33, but did not venture to determine it at the time, although I pointed out its resemblance to the Zoea of *Hyas araneus*. I have since, in "Northern Strømfjord 1913", p. 64, advanced reasons for ascribing the larva to *Hyas coarctatus*, only this form, and not *H. araneus*, having been found in Northern Strømfjord; the same applies to Bredefjord and adjacent waters, where, as my list shows, *Hyas coarctatus* is extremely common, whereas I did not find a single specimen of *Hyas araneus*. This seems to be more than sufficient proof of the correctness of my determination.

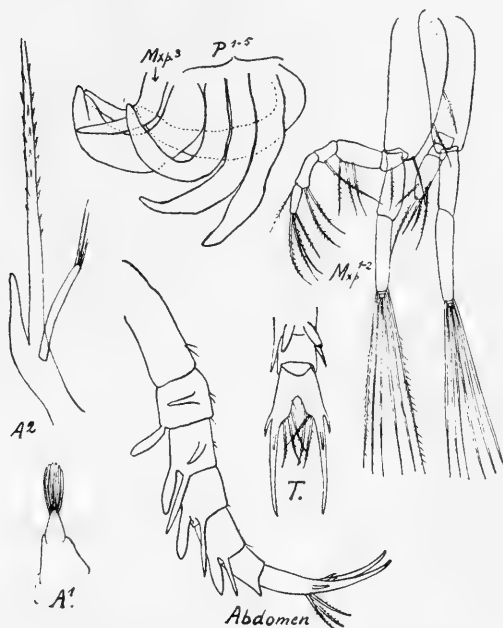


Fig. 1. *Hyas coarctatus*, 3. Zoea.

With regard to the Zoea stage, there is nothing to remark; reference may be made to my description in the "Tjalfe" expedition.

The older Zoea, of which I have taken but a single specimen at St. 126 and another at St. 147 (August 26. and September 5.) agrees entirely with the description given by WILLIAMSON of 3. Zoea stage of *Hyas araneus* in the Report on larval and later stages of certain Decapod Crustacea (Fishery board for Scotland, Sc. Invest. 1909, Nr. 1, 1911, p. 13, Pl. 1, fig. 1—2, Pl. 5, fig. 70—81, 83) and I have therefore considered it sufficient here to give detail figures of some of the limbs, referring for the rest to WILLIAMSON. The only point which needs be noted is that the 3. pair of maxillipedes, of which no trace was found in the 1. Zoea stage, now appears as a fairly large, cleft limb, this being, however, like the pereiopoda, without articulation.

In view of this complete uniformity, we can only suppose that either the Zoea of the two species resemble each other to such a degree that it has been impossible hitherto to discover any real difference,

or that WILLIAMSON's specimens belong to *Hyas coarctatus*. His determination, by the way, is not put forward with absolute certainty; but carefully stated thus: "this species is, I consider, *Hyas araneus*".

The Megalopa stage of the two species on the other hand exhibits certain differences, as will be seen by comparing WILLIAMSON l. c., p. 15, fig. 2, with W. BJÖRCK, *Biolog. faunistisch. Untersuch. Öresund* (Lunds Universitets Årsskrift, N. F., Afd. 2, vol. 9, Nr. 17), 1913, p. 22, text fig. 1—2.

#### 4. *Eupagurus pubescens* Kr.

Conspectus p. 6.

##### A. The adult stage.

Kvanefjord St. 4, 20,5—34 m., 1 spec. — Bredefjord St. 40, 170—180 m., 1 spec. — Skovfjord St. 156, 70—140 m., 2 spec.

B. The larva (G. O. SARS, *Decapodernes Forvandlinger* 2; *Archiv for Math. og Naturvid.*, Christiania, 1889, p. 154, Pl. 2, fig. 29).

Bredefjord St. 59, ringtrawl, 300 m. w., Zoea, 1 spec.; St. 66, 9—11 m., Zoea, 1 spec.

This species has been found in W. Greenland from Julianehaab to Umanak Fjord (abt. 71° N.).

#### × 5. *Munida Bamffica* Penn?

*Munida Bamffica* H. J. Hansen, *Crustacea Malacostraca*; The Danish "Ingolf" Exped., vol. 3, pt. 2, 1908, p. 32 (ubi lit. et syn.).

Bredefjord St. 31, ringtrawl, 700 m w., 2 spec. (Zoea).

Two specimens of a Zoea stage of this species were obtained at this station; they are very similar to, and probably identical with that described by Sars as 1. Zoea (*Decapodernes Forvandl.* 2, *Archiv f. Math. og Naturvid.*, Christiania, 1889, p. 178, Pl. 6, fig. 1—11. (*Munida rugosa*)).

Neither full-grown nor larval stages of this species have hitherto been found in true Greenland waters; the nearest locality at which it has been taken (full-grown) is W. of Iceland (H. J. HANSEN l. c., p. 32), while the larva was found by the "Tjalfe" expedition somewhere between Iceland and Greenland.

##### 5b. *Munida* sp. (*M. Bamffica*?). (Fig. 2).

Together with the two larvae of *Munida Bamffica* already mentioned, the "Rink" obtained two somewhat older *Munida* larvae, possibly belonging to the same species, both having teeth on the dorsal side of the 4—5 abdominal segment, such teeth not being found in the larva of *M. tenuimana* (*vide* my work on the "Tjalfe" expedition, p. 130, fig. 33—35). The length is 8 mm. Antennae and mxp. 1—2 have the same form as in the young larva of *M. tenuimana* ("Tjalfe" exped., fig. 35); in mxp. 3, however, the exopodite is quite small, as are also p1—p5.

Neither uropoda nor pleopoda are yet apparant, and the 6. abdominal segment is not separated from the telson. This latter is of the usual shape, having, however, on its posterior edge, 7 (not 5) pairs of spines, of which the 6. pair, reckoned from the centre, are far heavier than the others.

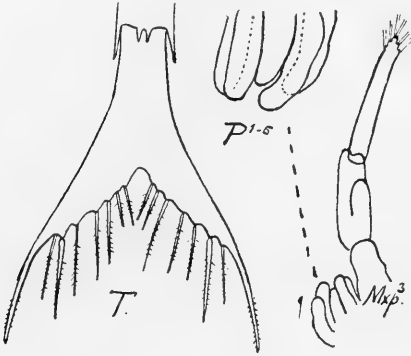


Fig. 2. Larva of *Munida* (*Bamffica*?).

6. *Munidopsis curvirostra* Whiteaves.

Conspectus p. 10.

*Munidopsis curvirostra* Selbie, Fisheries, Ireland, Sci. Invest. 1914, pt. 1 (1914), p. 84, Pl. 13, fig. 14.

Bredefjord St. 45, 430—450 m.,

3 spec., one ♀ with ova.

Hitherto found in W. Greenland 64°—65½° N.; and recently recorded by Selbie (f. c.) from 51°22' N., 12°41' W., 982 fms.

7. *Sclerocrangon boreas* Phipps.

Conspectus p. 12.

Bredefjord St. 32, 35—37 m., 6 spec., one with 2 *Piscicola*; St. 36, 29—100 m., 1 spec.; St. 37, 20—30 m., 1 spec.; St. 48, about 10 spec.; St. 66, 9—11 m., 4 spec.; St. 89, 16—17 m., 1 spec.; St. 104, 7—20 m., 8 spec. — Bredefjord Sermilik St. 110, 55—90 m., 2 spec. — Bredefjord St. 123, 5—10 m., 1 spec.; St. 127, 10—15 m., 1 spec. — Tunugdliarfik St. 142, 14—18 m., 3 spec.

This species, already known to be of very common occurrence along the whole coast of Greenland, was also frequently found in the area here investigated, from some few metres' depth to nearly 100 m. Many specimens had ova of *Piscicola*; a single one, from St. 32, having two grown *Piscicola*.

8. *Nectocrangon* lar Owen.

Conspectus p. 15.

A. The adult.

Kvanefjord St. 1, 84 m., 1 spec.; St. 2, 17—19 m., 1 spec. — Bredefjord St. 104, 7—20 m., 2 spec.; St. 123, 5—10 m., 2 spec.; St. 127, 10—15 m., 4 spec.

B. The young stage? (Fig. 3).

Bredefjord St. 61, 12, 5—13 m., 1 spec.; St. 65, ringtrawl, 500 m. w., 1 spec.; St. 66, 9—11 m., 2 spec.; St. 89, 16—17 m., 2 spec.; St. 104, 7—20 m., 4 spec.

At the station above mentioned, we obtained some young stages of a Crangonid which I have not been able to determine with absolute

certainly. Unfortunately, the development of the Greenland Crangonidae is but little known (*vide* Conspectus, where all that is known will be found stated under the separate species).

The young stage here in question having p2 almost as long as p1, must be either *Nectocrangon* or *Sclerocrangon*. *Sclerocrangon ferox*,

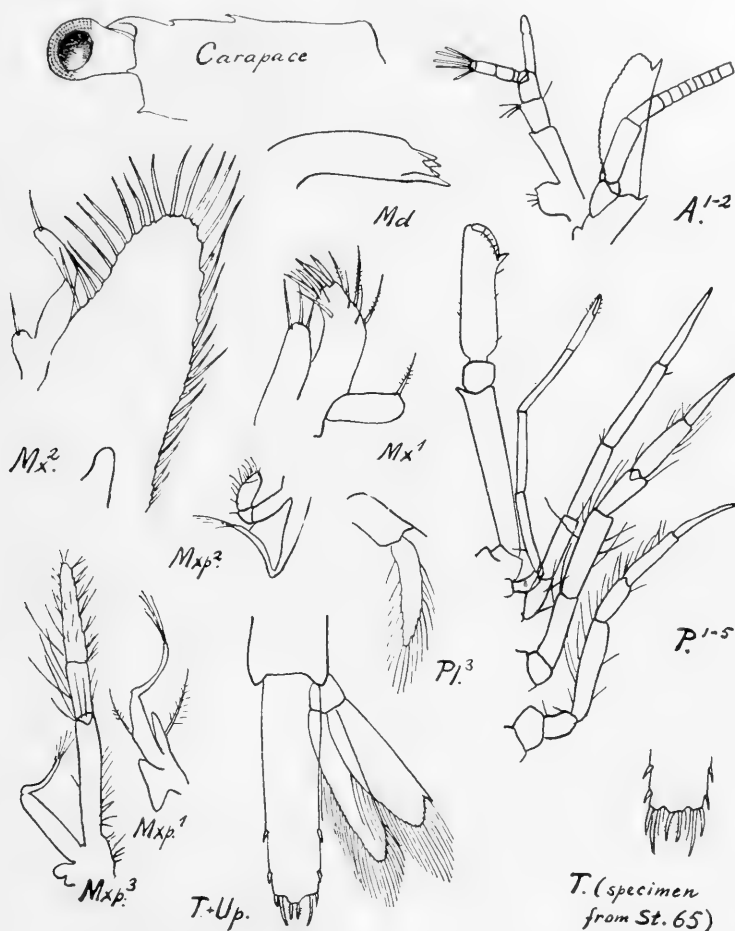


Fig. 3. *Nectocrangon* lar?, young stage.

as a deep sea form, may be disregarded, all the present specimens having been taken in shallow water (9—17 m.) with the exception of that from St. 65, which was brought up by the ringtrawl, with 500 m. wire out. There remain, then, *Sclerocrangon boreas* and *Nectocrangon*, both of which are found as grown specimens in the "Rink" material. *Sclerocrangon boreas*, however, is again excluded; Sars has described the young stage, or rather the young animal, as altogether resembling

the grown (Decapodernes Forvandl. 3, Archiv f. Math. og Naturvid., Christiania, vol. 14, 1890, p. 188, Pl. 6, fig. 29—31).

SARS writes (l. c., p. 181—82) that he has never, despite very careful search in Nordland and Finmarken, where *Sclerocrangon* is extremely common, succeeded in finding either larval or young stages, but only young specimens; altogether, or at any rate to a very high degree, resembling the fully grown, "all the characters of the developed animal being already well marked". We may therefore doubtless agree with SARS in presuming that *Sclerocrangon* has no developmental stages at all, but appears from the first in the same form as when fully grown.

In the case of young stages, of course, one should not attach too great systematic importance to such features as the shape of the carapace (here long and narrow) or peculiarities in the spinous armature; on the other hand, it is but natural that such characters should to a certain extent be taken into consideration. And in these respects, the present specimens agree entirely with the grown *Nectocrangon*, but not with *Sclerocrangon*. All things considered, therefore, I have but little doubt that the specimens in question are young stages of *Nectocrangon* lar, with regard to the development of which, however, absolutely nothing is known.

Length 11—12 mm.

The integument is comparatively soft, without sculpture; there are, however, two spines in the medio-dorsal line behind the rostrum, exactly as in grown *Nectocrangon* lar. There is also a spine beneath the eye, and at the anterior corner of the carapace. The shape of the telson is very characteristic, having almost parallel sides, with two spines on each, close to the end. At each of the posterior corners are two spines, of which the median is the longer. In most of the specimens, the posterior edge of the telson projects slightly in the centre, but is cut off sharply and armed with two spines; in some cases, (St. 61, 65, 66) two fine bristles are found on either side between this portion and the spines on the posterior corners. The telson thus differs from that of the grown *Nectocrangon*, which is almost the same shape as in the grown *Sclerocrangon*. I have nothing to remark concerning the appendages, but refer for these to my figures. The point of the flagellum in ant. 2 is lacking in all specimens. P2 is, as already mentioned, almost as long as p1.

True, the grown *Nectocrangon* has only been taken at one of the stations (St. 104) where the present young stage was found, while *Sclerocrangon boreas* was taken at St. 66, 89 and 104; the last-named species is, moreover, altogether of more frequent occurrence in the material than *Nectocrangon*; I have, however, for the reasons given above, no great doubt as to the correctness of my determination.

*Nectocrangon* lar is found in shallow water all round the coasts of Greenland. In addition to the area of distribution noted in the Con-



spectus, it has also been recorded from Japan (BALSS: Ostasiat. Decap., p. 2, 1914, p. 67).

9. *Sabinea Sarsii* S. I. Smith.

Conspectus p. 17.

Skovfjord St. 152, 80—120 m., 1 spec.

Hitherto found in W. Greenland only much farther north ( $65\frac{1}{2}$ — $66\frac{1}{2}^{\circ}$  N.).

10 ? *Sabinea septemcarinata* Sab. (Fig. 4).

Conspectus p. 18.

Bredefjord Sermilik St. 119, ringtrawl, 400 m. w., 2 spec. (young stage), 13 mm.

G. O. SARS has, in Decapodernes Forvandlinger 3 (Archiv f. Math. og Naturvid., vol. 14, 1890), p. 168, Pl. 6, Pl. 7, fig. 1—13, described the larval stages of this species, but not the young stage, which is not known.

Integument fairly hard. Sculpture only slight. Rostrum rounded at the point, and with some small setae. The one specimen has 3 spines in the mediodorsal line, two of which are placed one close behind the other immediately in front of the posterior edge; the other specimen had 4 spines here, of which three close behind the rostrum. On either side of the carapace are three parallel lateral carinae, the lowest terminating anteriorly in a spine, while there is also a spine on the anterior corner of the carapace. There is a suggestion of a carina on the 3. abdominal segment; other sculpture than this I have been unable to discover. The sides of the telson are almost parallel, with 4 pairs of small lateral spines (the distal spines lacking on the right side). The posterior corners project slightly, and are armed each with 2 spines. The median portion of the posterior edge curves slightly outward, and is furnished with 4 pairs of ciliated setae.

On comparing my figure of the oldest larval stage with that given by SARS (Pl. 7, fig. 1—13) it will be seen that the likeness is on the whole striking enough, mine being, however, somewhat more "grown" in form. I therefore give here the most important characters only.

Ant. 2 has a flagellum almost as long as the whole animal, with distinct articulation in the proximal part. Of the pereiopoda, only p1 has an exopodite. P2 is very small and has no chela. There are gills at the base of p1—p5.

The colour is still a faint red, despite three years' preservation in alcohol; 3 black pigment spots (dark red or reddish brown under the microscope) are visible on the squama, and two larger spots on the telson; no other pigment is present.

That my determination here is correct I consider absolutely beyond doubt. Of the Greenland Crangonidae, only Pontophilus and Sabinea

have a small p2; the p2 in this case, however, having no chela whatever, the specimens in question must be ascribed to *Sabinea*. Three species are, it is true, known from Greenland; *S. hystrix* is, however, so rare

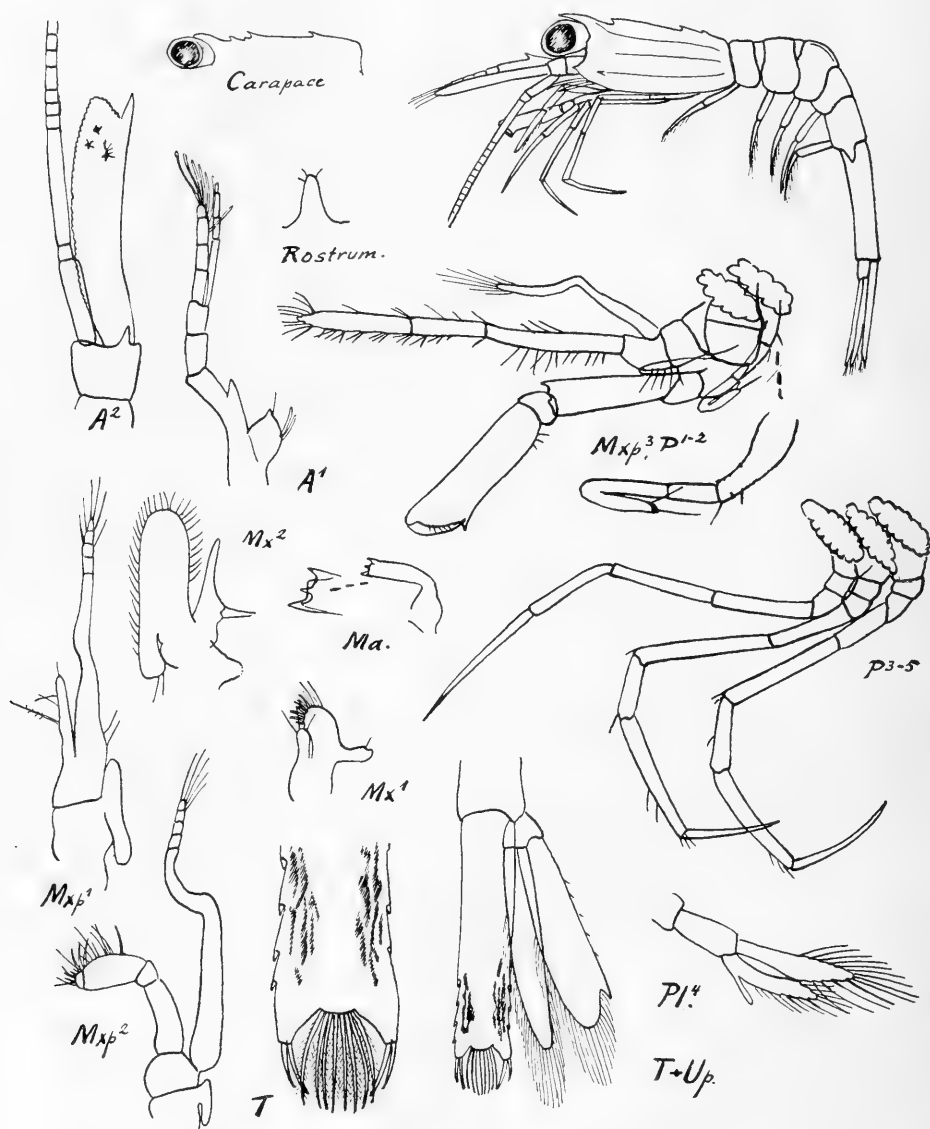


Fig. 4. *Sabinea septemcarinata?*, young stage.

that may be altogether disregarded. We have thus only *S. septemcarinata* and *S. Sarsii*. In *S. sept.*, the rostrum is rounded, in *S. Sarsii* pointed, while the telson is altogether different in the two species (*vide* Sars l. c., p. 180, Pl. 5; fig. 24—25). My specimens having a rounded

rostrum, and telson more resembling, though not altogether identical with that of *S. septemcarinata*, I consider it sufficiently certain that the specimens in question really are young stages of this species, and not of *S. Sarsii*. Moreover, the pigment spots on the telson agree entirely with those shown in Sars' figure of the older larva (l. c., Pl. 5, fig. 21) while the size (13 mm.) corresponds closely enough to the length of 11,5 mm. noted by Sars in the case of the older larva.

The species is not uncommon in East and West Greenland waters.

#### 11. *Pontophilus norvegicus* M. Sars.

Conspectus p. 20.

Only the larva, not the adult, was taken (see G. O. Sars, Decap. Forvandl. 3, Archiv for Math. og Naturvid., Christiania, vol. 14, 1890, p. 160, Pl. 4).

Bredefjord St. 31, 700 m. w., 1 spec.; St. 47, 600 m. w., 1 spec.; St. 72, 400 m. w., 1 spec.; St. 73, 300 m. w., 1 spec.; St. 86, 100 m. w., 1 spec.; St. 100, 500 m. w., 1 spec. — Bredefjord Sermilik St. 118, 500 m. w., 1 spec. — Bredefjord St. 126, 800 m. w., 3 spec.; St. 132, 700 m. w., 1 spec.

Hitherto found in W. Greenland only at  $63\frac{1}{2}$ — $66\frac{3}{4}$ ° N.

#### 12. *Spirontocaris Fabricii* Kr.

Conspectus p. 21.

Kvanefjord St. 4, 20,5—35 m., 3 spec., 1 with *Sylon Hippolytes*; St. 13, 34—40 m., 4 spec., 1 with *Sylon Hippolytes*. — Bredefjord St. 32, 35—37 m., about 10 spec., 1 with *Sylon Hippolytes*; St. 36, 29—100 m., 4 spec., 1 with *Sylon Hippolytes*; St. 48, 500 ccm., 11 with *Sylon Hippolytes*; St. 61, 12,5—13 m., 250 ccm., a few with ova, and 1 with *Sylon Hippolytes*; St. 62, 10—12 m., 6 spec., 1 with *Sylon Hippolytes*; St. 66, 9—11 m., 400 ccm., 1 with *Sylon Hippolytes* and 1 with *Bopyroides Hippolytes*; St. 79, 30—50 m., about 20 spec., one with *Sylon Hippolytes*; St. 88, 40—70 m., 1 spec.; St. 89, 16—17 m., 125 ccm., a few with ova, 1 with *Bopyroides Hippolytes*; St. 104, 7—20 m., 100 ccm.; St. 123, 5—10 m., about 35 spec. — Tunugdliarfik, St. 142, 14—18 m., about 50 spec., about 10 with ova and 3 with *Sylon Hippolytes*. — Skovfjord, 10—35 m., 2 spec., one with ova.

Numerically speaking, this is by far the most widely distributed of all *Spirontocaris* species in the area investigated. It is an endemic West Greenland species, found from the southern point of the mainland up to  $72\frac{1}{2}$ ° N.

It is interesting to note that so many of these specimens have *Sylon Hippolytes*, not only on account of the number, but also because this parasite had never before been found attached to this host.

For a larva and young stage ascribed to this species see p. 259, 266.

13. *Spirontocaris Gaimardii* M. Edw.

Conspectus p. 23.

Kvanefjord St. 4, 20,5—34 m., 1 spec. (*Sp. Gaimardii gibba* Kr.).

Strangely enough, only this one specimen was taken; the species is otherwise of very common occurrence in West Greenland.

Some months ago, I received a letter from Conservator C. DONS, of Tromsø (N. Norway), asking whether I did not consider *Sp. recurvirostris* Molander (Arkiv f. Zoologi, vol. 9, Nr. 6, 1914, p. 1, Pl. 1, fig. 1) to be merely a slightly differing form of *Sp. Gaimardii Belcheri* Bell. DONS himself had not material at his disposal for comparison. Unfortunately, I have not had time to go thoroughly into this question, but on examining some few specimens of *Sp. Gaimardii* from W. Greenland, where MOLANDER'S *Sp. recurvirostris* was originally taken, I cannot but consider that DONS' suggestion is correct.

14. *Spirontocaris spinus* Sow.

Conspectus p. 25.

Skovfjord St. 152, 80—120 m., 1 ♀ with ova.

15. *Spirontocaris Lilljeborgii* Danielssen.

Conspectus p. 27.

Kvanefjord St. 2, 17—19 m., 1 spec.; St. 4, 20,5—30 m., 1 spec.; St. 10, 19,5—54 (?) m., 1 spec. — Bredefjord St. 48, about 30 spec., several with ova, several with Bopyroides Hippolytes, 1 with Phryxus abdominalis; St. 76, 260—320 m., 1 spec.; St. 79, 30—50 m., 4 spec.; St. 87, 230 m., 1 spec.; St. 92, 50—90 m., 1 spec.; St. 127, 10—15 m., 3 spec. — Skovfjord St. 145, 10—15 m., 2 spec.; St. 155, 220 (240)—about 400 m., 1 spec.

This species is thus fairly widely distributed at the lesser depths, but has also been found at 230 m., 260—320 m. and 220 (240)—abt. 400 m. Strangely enough, the species has not hitherto been found in West Greenland south of abt. 66½° N.

16. *Spirontocaris turgida* Kr.

Conspectus p. 28.

Kvanefjord St. 4, 20,5—34 m., 8 spec.; St. 6, 45 m., 1 spec.; St. 9, 22—24 m., 1 ♀ with ova. — Bredefjord St. 32, 35—37 m., 3 spec., 1 ♀ with ova; St. 48, about 15 spec., several with ova; St. 61, 12,5—13 m., about 10 spec., 2 with ova; St. 62, 10—15 m., 5 spec., 2 ♀ with ova; St. 66, 9—11 m., abt. 15 spec., several with ova; St. 79, 30—50 m., 9 spec., 1 with ova; St. 89, 16—17 m., several spec.; St. 104, 7—20 m., 10 spec., 4 with ova; St. 123, 5—10 m., 12 spec., 1 with ova; ?St. 126, 800 m. w., 1 spec. juv.? — Tunugdliarfik St. 142, 14—18 m., 7 spec., 1 with ova. — Skovfjord St. 145, 10—35 m., 1 spec. with ova.

This species is thus very common at depths of from some few metres down to abt. 50 m. For larva se p. 256.

#### 17. *Spirontocaris polaris* Sab.

Conspectus p. 30.

Kvanefjord St. 1, 84 m., 1 ♀ with ova; St. 4, 20,5—34 m., 4 spec.; St. 6, 37—45 m., 1 ♀ with ova; St. 9, 22—24 m., 2 spec., 1 with ova; St. 10, 19,5—54 (?) m., 1 spec.; St. 11, 290—320 m., 1 spec. with *Phryxus abdominalis*; St. 12, 290—400 m., 5 spec., 1 with ova. — Bredefjord St. 32, 35—37 m., 5 spec., 1 with ova; St. 40, 170—180 m., 3 spec., 1 with ova; St. 48, about 100 spec., several with *Bopyroides Hippolytes*; St. 61, 12,5—13 m., 10 spec.; St. 66, 9—11 m., 150 cem., 6 with *Bopyroides Hippolytes*, several with ova; St. 79, 30—50 m., about 50 spec.; St. 89, 16—17 m., 15 spec.; St. 91, 110—180 m., 2 spec., 1 with ova; St. 97, 250—280 m., 1 spec.; St. 103, 90—100 m., 1 with ova; St. 104, 7—20 m., about 20 spec., 1 with *Bopyroides Hippolytes*; St. 109, 125—140 m., 2 spec., 1 with ova. — Bredefjord Sermilik St. 110, 55—90 m., 1 spec. — Bredefjord St. 123, 5—10 m., 3 spec. — Tunugdliarfik, several spec., several with ova. — Skovfjord St. 156, 70—140 m., 2 spec.

This species is thus common in shallow water and down to abt. 400 m., being most frequently found, however, from the surface to abt. 50 m.

Young and larval stages *vide infra* p. 254, 267.

#### 18. *Spirontocaris groenlandica* Fabr.

Conspectus p. 34.

Bredefjord St. 32, 35—37 m., 2 spec.; St. 37, 20—30 m., 1 spec.; St. 48, about 10 spec.; St. 61, 12,5—13 m.; St. 66, 9—11 m. 8 spec.; St. 79, 30—50 m., 2 spec.; St. 89, 16—17 m., 2 spec., 1 young with larva of *Phryxus abdominalis*. — Skovfjord St. 156, 70—140 m., 1 spec.

This species, otherwise extraordinarily numerous in all Greenland waters, is thus, as regards the area here investigated, not nearly so common as might have been expected.

Besides the localities other than Greenland mentioned in the Conspectus, the species has also been taken at Awatscha (Japan?) (BALSS: *Ostasiat. Decap.*, 1914, p. 45).

For young form, *vide infra* p. 264.

#### 19. *Spirontocaris microceros* Kr.

Conspectus p. 37.

Bredefjord St. 48, 1 spec.

The finding of this species is one of the most interesting results of the expedition; the specimen in question is somewhat defective, but the determination nevertheless certain.

When H. J. HANSEN drew up his list of the Malacostraca of W. Greenland, in 1887, it was only known from 4 places in all, viz.: Nanortalik, Ivigtut, Umanak and Prøven. In 1911, it was found by Dr. NORDMANN in Northern Strømfjord, abt. 67° N. (*vide* my work on this expedition, p. 65). The present find thus adds a new locality.

### On the Development of the Genus *Spirontocaris*.

Although the genus *Spirontocaris* is widely distributed throughout the northern seas, there are, strangely enough, but few writers who have studied its development.

No species has been described from the egg to its full growth; G. O. SARS has, however, recently given a description of the postembryonal development of an allied form, *Hippolyte varians* Leach (in Archiv for Math. og Naturvid., Kristiania, vol. 32, Nr. 7, 1912, p. 1—25, with three double page plates).

I have been carefully through the literature on the subject, but have not been able to find anything beyond what is mentioned below.

*Spirontocaris* sp. Claus, Zur Kenntniss d. Malacostracen-larven; Würzburg Naturwiss. Zeitschr., vol. 2, 1861, p. 40, Pl. 3, fig. 8.

*Sp. polaris*, embryo, KRØYER, Monograf. Fremstill. Sl. Hippolyte; Kgl. Danske Vid. Selsk. Math.-Naturvidensk. Afh., 1842, p. 245, Pl. 6, fig. 120—32.

*Sp. Cranchii* and *Sp. pusiola*. SARS states in a footnote on p. 5 of his work above mentioned, on *Hippolyte varians*, that he has hatched out these species, but he does not describe their development.

*Sp. sp.* Some developmental stages, including a young stage of *Sp. groenlandica*, I have myself described in Danmark Exped. 1912, p. 516—25, Pl. 39—43, and in the "Tjalfe" Exped. 1912, p. 126, fig. 32.

This then, is all I have been able to find. As, however, the material collected by myself includes much bearing upon this question, I have taken the opportunity to clear up various points in connection therewith.

As will be seen in the following pages, the quantity of material brought home by the present expedition is so large as to more than double our knowledge of the development in this genus; this is due partly to the use of the ringtrawl, and partly that of the stramin dredge, both of which fished with an unusual degree of intensity.

The material includes young stages of 4 species, of which two not hitherto known, and larvae of 4 species, of which one only has previously been described, and this, moreover not with certainty. A fifth Decapod larva is also new, but as it presents strong points of difference, I have not ventured to regard it as altogether certainly belonging to this genus.

G. O. SARS, in his Account of the postembryonal development of *Hippolyte varians* (Archiv f. Math. og Naturvid., Kristiania, vol. 32, Nr. 7, 1912, p. 21—22), states that the older larvae of *Hippolyte* and

*Spirontocaris* may be distinguished by the fact that the first-named has only 5 pair of natatory rami (exopodites), viz.: on mxp. 1—3 and p1—2, whereas *Spirontocaris* has 7 pairs, the additional two being on p3—p4. This agrees entirely with my own results; I am unable to see, however, whence Sars has his knowledge of *Spirontocaris*, if not from the spec. of *Sp. Cranchii* and *Sp. pusiola* hatched by him (Sars l. c. on *Hippolyte* var.), as the only description of an older *Spirontocaris* larva which I have been able to find in extant literature is the larva described by CLAUS (l. c.); this lacks exopodites on p3—p4, and I am not certain that it really belongs to this genus.

Being unable to determine my larvae with certainty, I have numbered them for convenience of reference. I have, however, disregarded Nr. 5 in the following remarks concerning development, as I am not certain that it really belongs to this genus.

In point of habit, the larvae resemble that of *Hippolyte* varians described by Sars, but may be distinguished from this at a first glance by being more slender, and by the fact that none of them have any dentition on the anterior part of the lower edge of the carapace. There is generally a small protuberance behind the basis of the rostrum; the length of the rostrum does not generally exceed that of the eyes, and frequently falls short of this. All the larvae have a supra-ocular spine.

It is remarkable that the larvae of the different species come into the world at very different stages. Nr. 1, for instance (first free stage of *Sp. polaris*?), in which the 6. and 7. caudal segments are not yet separated, and the uropoda still within the integument, has nevertheless comparatively well-developed pleopoda and well articulated pereopoda of almost adult form but without exopodites at all. Larva Nr. 3 on the other hand, has in its youngest known stage the 6. and 7. caudal segments separate, and the uropoda free, while p3—p5 have no trace of articulation, and pleopoda are lacking.

This difference in the degree of development cannot be taken as proof that the larvae do not all belong to the same genus, and that some have consequently been incorrectly determined; it should rather be regarded as a secondary feature, due to the partially arctic conditions, possibly arising from the low salinity of the water nearest the surface. Arrested metamorphosis is, moreover, also known among not a few arctic forms, the Echinodermata especially, and one species of *Sclerocrangon*, *Scl. boreas*, has, as far as we know (*teste* Sars, *vide supra* p 246) no larval stage at all, while the other, *Sc. ferox*, has larval development, although arrested.

*Spirontocaris* has, it would seem, no real Zoea stage; Larva Nr. 1 should, it is true, from the shape of the telson, be a Zoea, but the pereopoda are here too well developed, and a true Zoea has, moreover, no pleopoda. Most of the larvae should be characterised as Mysis-stages.

In the young stages, the mandibles are of adult form, a distinct

cutting part having made its appearance, in addition to the molar part; mxp. 2 is curved, and is likewise almost of adult shape.

The following 5 *Spirontocaris* species are of common occurrence in the material: *Sp. Fabricii*, *Sp. Lilljeborgii*, *Sp. turgida*, *Sp. polaris* and *Sp. groenlandica*; the remaining species are represented only by some few specimens. We have therefore some justification for supposing that the larvae should be ascribed to these 5 species. Presuming larva Nr. 1 to be that of *Sp. polaris*, this species may be disregarded in seeking to determine the rest.

If Larva Nr. 2 be the same species as described in the Danmark Exped. then it is out of the question that it should belong to *Sp. Fabricii*, as this species is only found in W. Greenland. On the other hand, its frequency leads us to suppose that it might belong to *Sp. turgida*, the species next in order of frequency in the material.

Larva Nr. 3 should, from its high numerical position, probably be ascribed to *Sp. Fabricii* (*vide* p. 259).

Larva Nr. 4 would then, supposing the foregoing to be correct, belong either to *Sp. Lilljeborgii* or *Sp. groenlandica*. I readily admit however, that my conclusions as to determination of these larvae rest on a very slight foundation.

*Spirontocaris* larva Nr. 1.

(1. free stage of *Sp. polaris*?) (Fig. 5).

Bredefjord St. 35, ringtrawl, 400 m. w., 16/VII 1912, 1 spec., 8 mm.

At this station the "Rink" obtained a *Spirontocaris* larva which in the spines on 4. and 5. abdominal segment closely resembles the larva Nr. 2 described below; the present specimen, however, belongs to another species.

Young and old characters are here combined in a remarkable manner. The rostrum is quite short and thick, there is a supra-ocular spine, and one below the antennae, but not above the antennae. The peduncle of ant. 1 has three joints, with a spine on the under side of the first. The flagellum of ant. 2 is not articulated, a first segment is, however, indicated, and there is a suggestion of a second; the length of the flagellum cannot be given, as the point is lacking. The maxillipedes are of altogether larval type, and have large exopodites; p1—p5 however, are very close to the adult form, with distinct articulation, and, on p1—p2, large chelae; exopodites are altogether lacking; there are small gills, however, at the base. An even more adult character is the fact that 5. joint of p2 bears a slight trace of being divided into other (2) joints again. All 5 pairs of pleopoda are present, but appear to lack articulation. The telson is not separated from the 6th abdominal segment; it is of the usual larval form, and appears to have been furnished with 8(9?) pairs of bristles on its posterior edge (including the corner). Only portions of 7 pairs are remaining, but there would seem to have been two



pairs more at either corner. There are fine setae between the bristles. The uropoda may be seen through the telson, lying inside the integument.

Despite the resemblance to Larva Nr. 2 (the spines on 4.—5. abdominal segment) this is distinctly of another species. Its metamorphosis is far more arrested, is seen from the "adult" form of the pereopoda and the large pleopoda, as compared with the still undeveloped telson. If the supraocular spines are preserved until the adult stage is reached, then it should (*vide* p. 258) either belong to *Sp. polaris*,

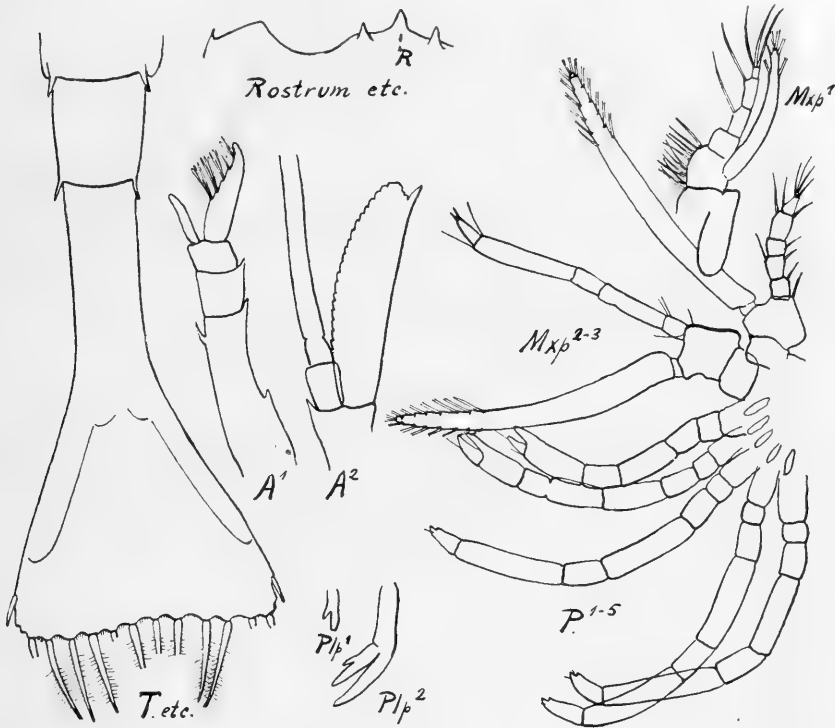


Fig. 5. *Spirontocaris polaris*?, the first freeliving stage.

to *Sp. groenlandica*, *Sp. turgida*, or *Sp. Lilljeborgii*. It shows a remarkable resemblance to the figure which KRØYER gives of the embryo of *Sp. polaris* (Monograf. Fremstill. Sl. Hippolytes nordiske Arter, Kgl. Danske Vid. Selsk. math.-naturvid. Afh., vol. 9, 1842, p 245 (37), Pl. 6, fig. 120—32).

Making allowance for the fact that KRØYER's figures and description are based upon embryos, where spines, etc. could hardly be expected to be developed, while the present larva was taken as a free living stage, the resemblance is in all other respects so great as to leave, in my opinion, but little doubt that the larva here in question actually is the first free stage of *Spirontocaris polaris*.

The time at which it taken, also (16. July) need not detract from the probability of this being the case, as *Spirontocaris polaris* has been taken with ova from St. 1 (21. June) to St. 142 (2. Sept.).

*Spirontocaris* larva Nr. 2 (Fig. 6—7). (*Sp. turgida?*)

1. stage. Kvanefjord St. 28, 400 m. w. (5/viii), 10 spec. — Bredefjord St. 47, 600 m. w. (18/vii), 1 spec.

Intermediate stages. Kvanefjord St. 28, 400 m. w. (5/vii) about 25 spec. — Bredefjord St. 35, 400 m. w. (16/vii), 1 spec.; St. 73, 300 m. w. (25/vii), 2 spec.; St. 84, 200 m. w. (31/vii), 1 spec.; St. 89, 16—17 m. (31/vii), 1 spec.

Last stage. Kvanefjord St. 28, 400 m. w. (5/vii), about 50 spec. — Bredefjord St. 35, 400 m. w. (16/vii), 1 spec.; St. 50, 100 m. w. (20/vii), 1 spec.; St. 59, 300 m. w. (20/vii), 1 spec.; St. 61, 12,5—13 m. (22/vii), 5 spec.; St. 64, 600 m. w. (23/vii), 2 spec.; St. 66, 9—11 m. (23/vii), about 15 spec.; St. 89, 16—17 m., (31/vii) 1 spec.; St. 104, 7—20 m. (5/viii), 4 spec.; St. 128, 700 m. w. (26/viii), 3 spec.

In the Danmark Exped. 1912, p. 522—24, Pl. 43, and the "Tjalfe" Exped. 1912, p. 126—27, fig. 32, I have described a Mysis stage of a *Spirontocaris* larva, which I believe to have found again in my own collections. As will be seen from the foregoing list, it was found at a considerable number of stations, and in more than 3 different stages, none of which, however, entirely agrees with that I have previously described. That it is the same species, however, is fairly certain, *inter alia* on account of the spines on 4.—5. abdominal segment; the resemblance is also sufficiently evident when the two are compared. The stage previously described is, however, too large in proportion (abt. 10 mm.) and the spines on the telson there too long, the rostrum also, seen in profile view, being somewhat slenderer at the base.

I have drawn the youngest and the oldest stages; between these lie a number of intermediate forms, which are not easy to divide up into distinct stages.

Youngest stage (Fig. 6). Length 6,5 mm. Fore end of the carapace and the rostrum are of exactly the same shape as in my figure of these parts in the oldest stage. The rostrum is comparatively long, very pointed, with a small wart above the base. There is a spine above the eye and also over and under the base of 2. pair of antennae. In ant. 1, the 2. joint of the peduncle is not yet separated from the first; this joint has a spine on the under side of the distal end, just as in the later stages. In ant. 2, the length of the flagellum is equal to that of the squama; there is no articulation. The maxillipedes are of entirely larval character. P1—p2 have chelae and exopodites, but are altogether without articulation, as also p3—p5. Pleopode 1 is altogether lacking in some specimens; in others it appears in the form of a very small protuberance. Plp 2—5 are cleft but small, and without articulation.

In the uropoda, the inner ramus is short, and without bristles on the edge. The telson is slightly concave at the distal end, and is here twice as broad as at its base. The posterior edge is armed with 7 pairs of

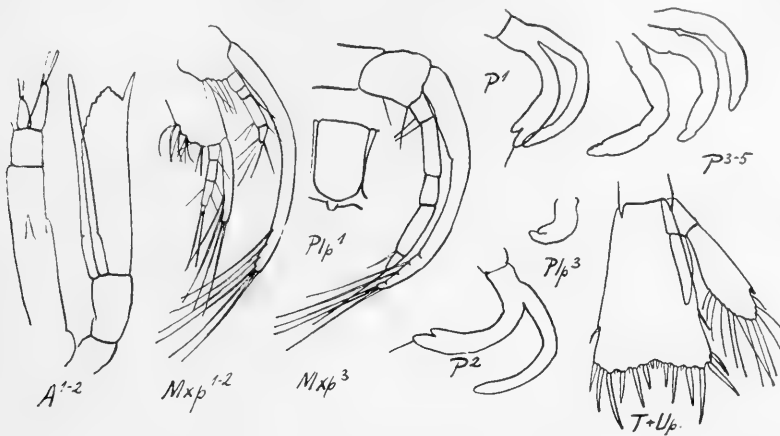


Fig. 6. *Spirontocaris*-larva Nr. 2, 1. stage.

spines in all (including the corners), the middle pair, however, being quite small, the third from the end being the longest. Between the bristles are fine setae. There is a small spine on either side a little in front of the corner.

Intermediate stages. The youngest and oldest stages are connected by a number of intermediate forms, which can, however, hardly be separated into distinct stages, as their characters appear partly to overlap. Some of them correspond more or less to my descriptions in the "Danmark" and "Tjalfe" Exped.; in all, however, the spines on the telson are smaller than there described.

Oldest stage (Fig. 7). Length 8 mm. (one specimen, however, from St. 64, measured 10—11 mm.). Antennae almost as in youngest stage, but peduncle of ant. 1 now with 3 joints, while in ant. 2, the peduncle is now  $1\frac{1}{2}$  times as long as the squama, and has developed two distinct articulations at its base. The maxillipedes are of almost the same shape as in the youngest stage. All pereopoda have now become articulated, and there is also an exopodite on p3. Gills at the base of p1—p5. The pleopoda are now larger, and the branches in articulate connection with the peduncle, natatory setae, however, are lacking, save for a single one at the point of the exopodite. The uropoda about the same length as the telson, and there are also bristles on the endopodite. The telson has almost parallel sides, its length is between 3 and 4 times its breadth; in most of the specimens it is somewhat broader than in the one shown in the figure. There are 6 pair of bristles on the posterior edge (including corners) and two spines on either side.

This larva can hardly be determined with certainty. The youngest stage is somewhat older than the 3. stage of *Hippolyte* varians described by Sars (l c. *supra*), p. 11, Pl. 4, fig. 1—7. If we presume, as I consider must certainly be the case, that the supra-ocular spine is retained until the adult stage is reached, we have then to choose between the following species: *Sp. polaris*, *Sp. microceros*, *Sp. groenlandica*, *Sp. turgida*, *Sp. spinus* and *Sp. Lilljeborgii*. Of these, *Sp. spinus* and *Sp. microceros* may be excluded, on account of their rarity in the waters in question. There is, also, the more reason to consider the pre-

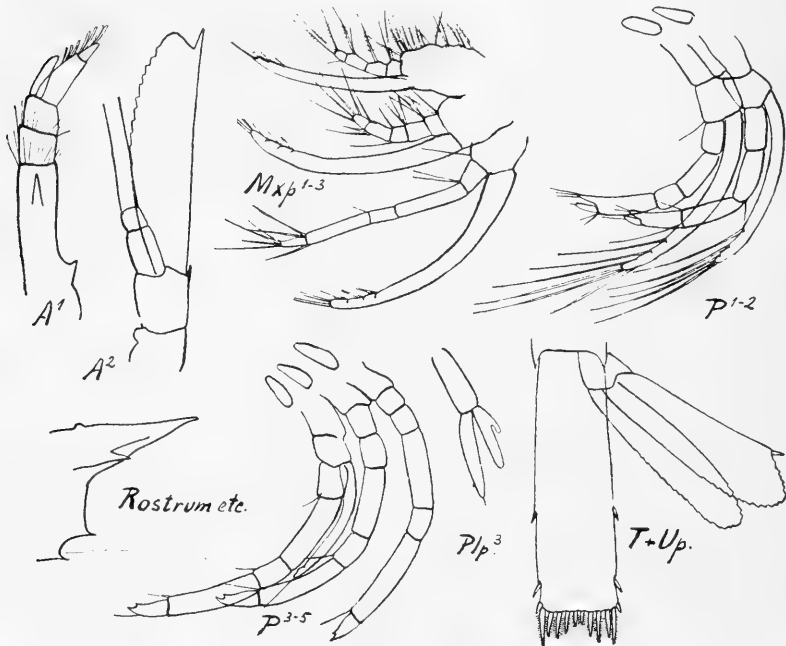


Fig. 7. *Spirontocaris*-larva Nr. 2, last stage.

sent specimen as belonging to one of the remaining species, since these are (with the exception of *Sp. Gaimardii*, *Sp. spinus* and *Sp. Lilljeborgii*, which may probably be disregarded) the only species of *Spirontocaris* taken by the Danmark expedition in the waters then investigated. That it does not belong to *Sp. Gaimardii* I consider certain, as the adult of this species was only taken by the "Rink" at a single place (in Kvane-fjord) and there represented by only a single specimen, whereas the larva in question was of common occurrence in Bredefjord.

*Sp. polaris* may probably also be excluded (*vide supra* p. 254); the larva must therefore be either *Sp. groenlandica*, *Sp. turgida*, or *Sp. Lilljeborgii*, and, as already mentioned (p. 254) it seems reasonable to suppose that it is in fact the larva of *Sp. turgida*. The material also

includes many females of this species taken with ova from 25. June (St. 9) to 5. Sept. (St. 145).

*Spirontocaris* larva Nr. 3. (*Sp. Fabricii?*)

1. stage. Kvanefjord St. 28, 400 m. w. (5/vii), 1 spec. — Bredefjord St. 50, 100 m. w. (20/vii), 4 spec. — (?St. 59, 300 m. w. (22/vii), 1 spec.).

Intermediate stage. Kvanefjord St. 28, 400 m. w. (5/vii), 1 spec. — Bredefjord St. 50, 100 m. w. (20/vii), 7 spec.; St. 59, 300 m. w. (22/vii), 3 spec.; St. 86, 100 m. w. (31/vii), 1 spec.; St. 106, 100 m. w. (7/viii), 4 spec.

Last stage. Bredefjord St. 59, 300 m. w. (22/vii), 1 spec.; St. 128, 700 m. w. (26/viii), 1 spec.; St. 131, 800 m. w. (28/viii), 1 spec.

All these evidently belong to one and the same species. The two oldest stages have a spine below (in front of) the anus, this spine, however, I have not been able to discover in the youngest stage. The oldest stage is that described and drawn in greatest detail; in the case of the others, I have only mentioned and shown the features in which they differ from the oldest stage.

Youngest stage (Fig. 8). 5—6 mm. In ant. 1, the endopodite is very small, the peduncle still consists of but two joints, and has no spine on the underside. In ant. 2 the flagellum is half as long as the squama, terminating in a point with spines. Mxp. 1—3 are as in the next stage, as also p1—p2, the exopodite, however, lacks natatory setae; this stage must therefore probably be described as an old Zoea. P3—p4 are cleft without articulation, p5, on the other hand, lacks the exopodite. The pleopoda are apparent as a very slight bulge on the ventral side. In the uropoda, there is still no articulate connection between the branches and the peduncle, the outer ramus has a few, the inner ramus only two, pennate bristles. The telson is fairly broad, with a spine on either side. The posterior edge is slightly convex, and armed with 7 pairs of spines, of very characteristic lengths. Counting from the centre we find Nr. 1 very small, Nr. 2 abt. 3 times as long, and Nr. 3 twice as long as Nr. 2; Nr. 2 slightly longer than Nr. 2, Nr. 5 a little longer than Nr. 3, and Nr. 6 again a little longer. The tip of Nr. 7 is lacking, so that its length cannot be seen; it would seem, however, to have been about the same length as Nr. 6.

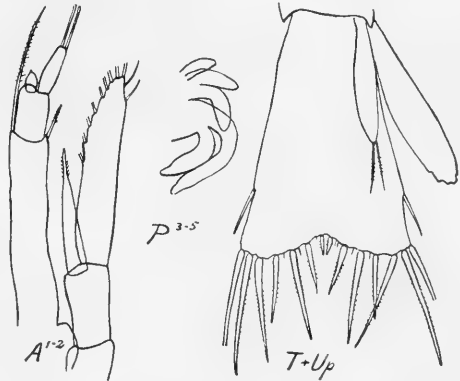


Fig. 8. *Spirontocaris*-larva Nr. 3, 1. stage.

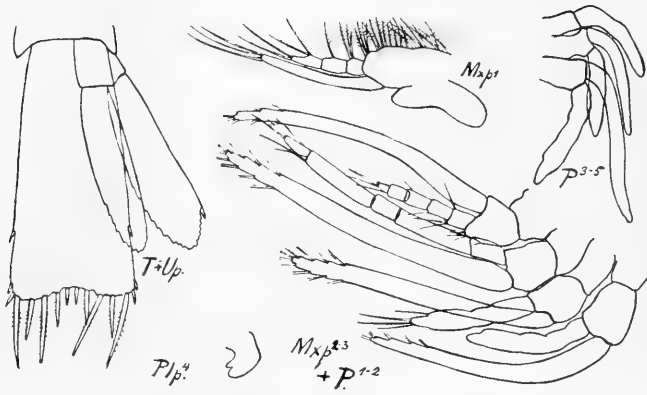


Fig. 9. Spirontocaris-larva Nr. 3, intermediate stage,

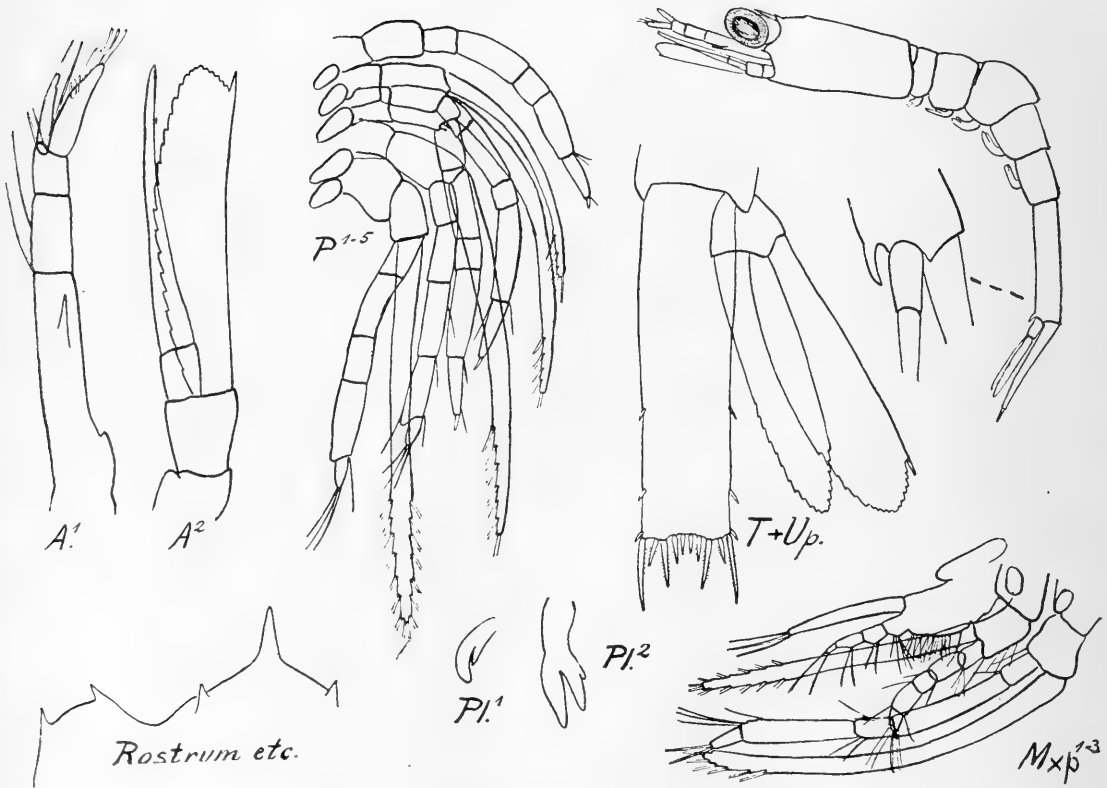


Fig. 10. Spirontocaris-larva Nr. 3, last stage.

Intermediate stage (Fig. 9). 7—8 mm. The flagellum in ant. 2 only half as long as the squama. Mxp. 1—3 about the same as in the oldest stage. In p1—p2 there are now natatory setae on the exopodite. P3—p5 have grown, and the branches are now in articulate connection with the peduncle. There are small cleft, but inarticulate, pleopoda (pl1, however, is not yet present). The uropoda have now the usual setose arrangement. The telson has grown narrower, and spines 6 and 7 on the posterior edge are now quite small.

Oldest stage (Fig. 10). 8—9 mm. The rostrum is pointed, flat, and not very long; there is a spine above the eye and over and under the base of the antennae. There are no dorsal spines on the abdomen, as in several of the other larvae described (Nos. 1 and 2); the 6. abdominal segment, however, has a spine in front of the anus. The sides of the telson are almost parallel, which suggests that the larva must be an old one; on the posterior edge (including corners) there are 6 spines, and two pairs of spines on either side of the telson. The antennae are not particularly slender, and the flagellum in ant. 2 is only of the same length as the squama; only the first segment is separated off from the remainder. As in the intermediate stage, there is a spine on the under side of the first joint in the peduncle of ant. 1. With regard to the maxillipedes there is nothing to remark; p1—p5 however, have become articulated, and p1—p2 show some suggestion of chelae. There are natatory setae also on the exopodite of p3—p4. Plp1 is now apparent, and is cleft, but none of the pleopoda are articulated.

All stages of this larva are very slender in shape, and are characterised by the exopodite on p1—p4; the two oldest stages also by the spine beneath the anus.

This being the larva of most frequent occurrence in the material, there is reason to believe that it belongs to *Spirontocaris Fabricii*, this species being that of most common occurrence in the area investigated.

*Spirontocaris* larva Nr. 4 (Fig. 11).

Kvanefjord St. 28, 400 m. w. (5/vii), 3 spec. — Bredefjord St. 30, Nansen-net, 250—200 m. (15/vii), 1 spec.; St. 35, 400 m. w. (16/vii), 2 spec.; St. 50, 100 m. w. (20/vii), 2 spec.; St. 59, 300 m. w. (22/vii), about 20 spec.

Length 9—11 mm. This larva is a Mysis stage, there being exopodites on p1—p3. The rostrum is thin, slightly longer than the eye (in the one of the specimens from St. 50, which is somewhat defective, the rostrum is only half as long as the eye). There are spines above the eye, and over and under the base of the antennae. No spines on the abdomen. The telson is triangular, with three pairs of spines on the posterior edge (corners included) and the spine on the side in front of the corner.

The antennae are slender, and the flagellum in ant. 2 shows incipient articulation (5 joints). With regard to md., mx. 1—2 and mxp. 1—3 nothing to remark save that the endopodite in mxp. 2 is slightly

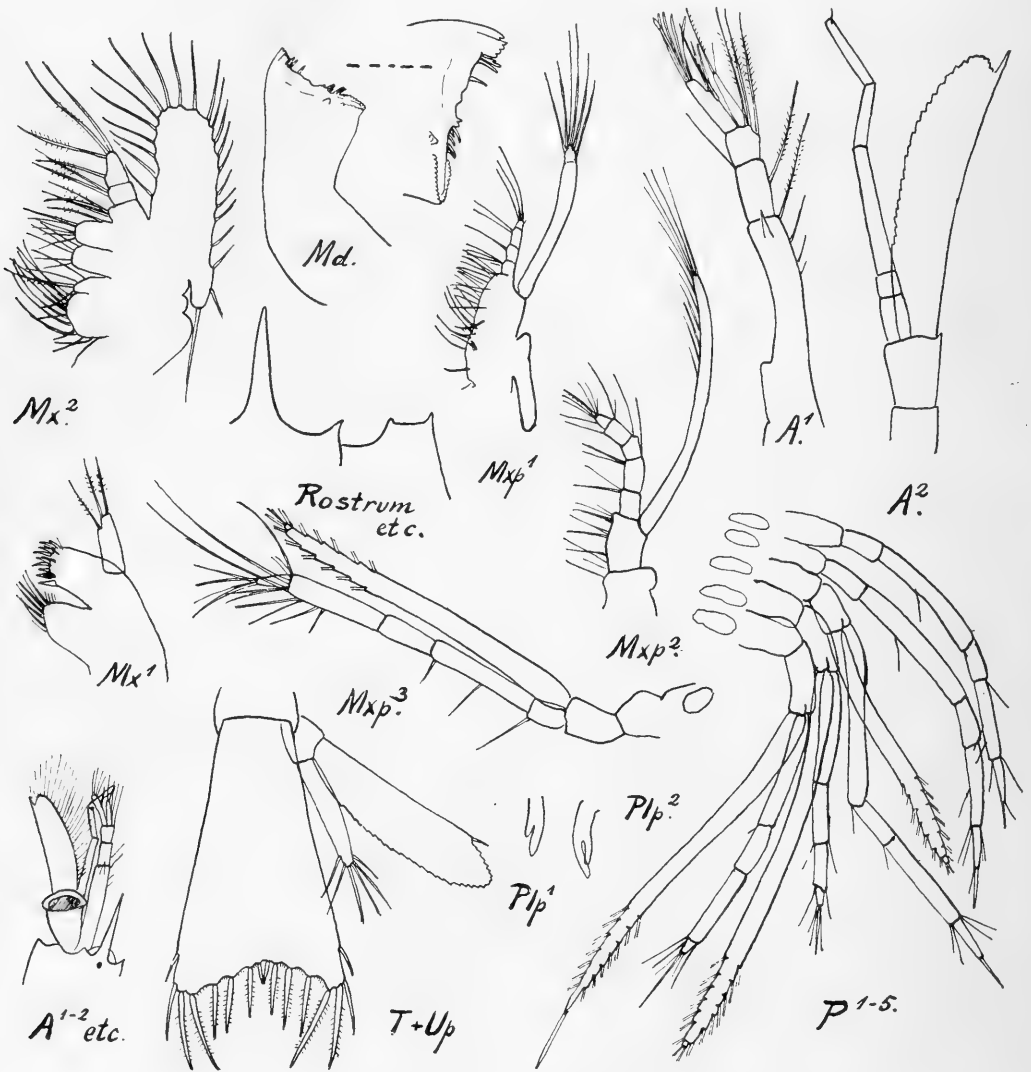


Fig. 11. *Spirontocaris*-larva Nr. 4.

curved, and thus approaches the adult form. P1—2 are of the same shape as mxp. 3; the 3. and 4. joints, however, appear to be hardly separated as yet. In some few specimens there may be a faint suggestion of a chela in p1, as also some slight variation in the articulation of the flagellum in ant. 2. In p3—5, the 7. joint is longer than in p1—p2;



the 3. and 4. joint are as yet not separated by articulation. The pleopoda are cleft, but not articulated. In the uropoda, the inner ramus is very short, and has abt. 6 bristles at its point. In some few specimens there may be a pair of spines over the base of the rostrum.

*Spirontocaris* (?) larva Nr. 5 (Fig. 12).

Bredefjord St. 64, 600 m. w. (23/vii), 1 spec., 9 m.

A highly characteristic larva was taken at this station. It is a young Mysis stage, there being exopodites in p1—p3, and it is easily distin-

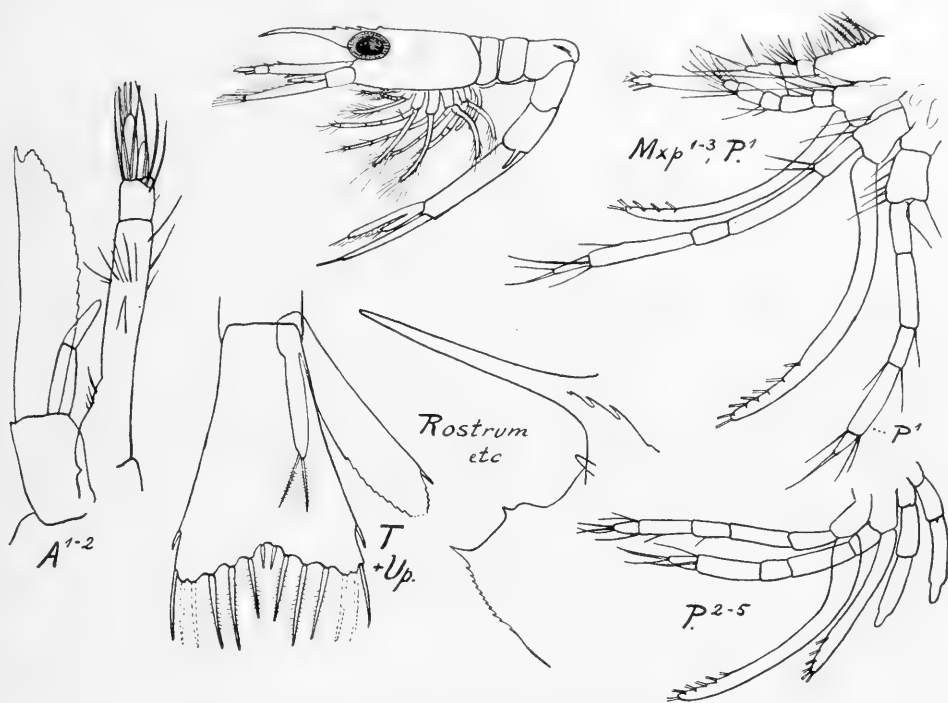


Fig. 12. *Spirontocaris*(?)-larva Nr. 5.

guised by the following characters: Rostrum very long, only slightly shorter than the carapace, pointed, with three teeth above the base; the eye is very large and somewhat flattened; there is a spine above the eye, and above and below the 2. ant.; the anterior portion of the lower edge is armed with abt. 10 teeth. The abdomen very long and thin, with a marked break, which cannot, apparently, be straightened out, at the 3. abdominal segment, which is drawn out into something resembling a carina at the hinder end. There is also a spine on either side of the 5. abdominal segment.

With regard to ant. 1, there is nothing to remark, save that this is very slender; the 1. joint of the peduncle has a spine on its lower side; the 2. joint is not yet separated from the first. In ant. 2, the fla-

gellum consists of 2 joints. Mxp. 1—3 have the usual larval character, with 2 exopodites, and p1—p3 are almost alike, without any indication of a chela on p1—2. No trace of pleopoda. The telson is triangular, and was doubtless armed on its posterior edge with 7 pairs of spines, the middle pair quite small. In the uropoda, the exopodite and endopodite are not separated from the peduncle by articulation; the endopodite has two bristles at its point, while the exopodite is furnished with the usual setose arrangement.

I am unable to determine this larva, which, as shown above, differs very considerably from the *Spirontocaris* larvæ hitherto described; on purely negative grounds, however, it may with some degree of certainty be considered as belonging to the genus *Spirontocaris*.

All Greenland genera of *Macrura* are known in their larval stage (*Bythocaris* and *Sclerocrangon* have no larval development); with the exception of *Nectocrangon*, *Glyphocrangon* and *Hymenodora*. Of these, *Glyphocrangon* is so rare as to be out of the question here, while *Hymenodora* has practically speaking only been found in E. Greenland waters, and is not known from W. Greenland. (I have not been able to consult MONTICELLI and LO BIANCO'S work on the development of *Gennadas elegans*, in *Monitore Zool. Ital.*, vol. 11, suppl., Roma 1900). There remains then, only *Nectocrangon* lar, and I cannot but admit a certain degree of probability that the larva in question may belong to this species; with its long rostrum and generally slender shape, it resembles several of the *Crangonid* larvae described by Sars; this is, however, of course but a very slight foundation for conclusion. Far more important is the fact that none of Sars' *Crangonid* larvae, not even the oldest stage, have any exopodite on p3, a point which weighs heavily against the probability of the present specimen being a *Crangonid*. We may therefore, with a very fair degree of certainty, refer it to the genus *Spirontocaris*.

*Spirontocaris groenlandica* juv. (Fig. 13).

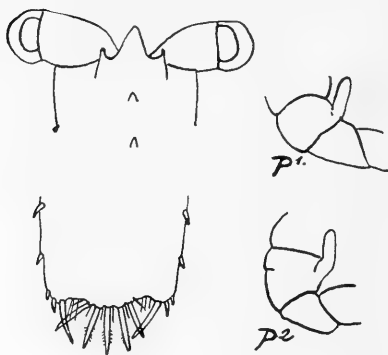


Fig. 13. *Spirontocaris groenlandica* juv. Rostrum etc., telson and base of p1—p2.

Bredefjord St. 48 (19/vii), 5 spec.; St. 61, 12,5—13 m. (22/vi), 3 spec.; St. 66, 9—11 m. (23/vii) about 10 spec.; St. 89, 16—17 m. (31/vii), 5 spec.

In the Danmark Exped. (p. 516, Pl. 39) I described the young stage of *Spirontocaris groenlandica* (?); as a matter of fact, in view of the elongated lateral parts of the abdominal segments, there can be no doubt that this determination was correct.

As will be seen from the above, my own collections now include a

number of specimens (the adult *Sp. groenlandica* was taken at all the above mentioned stations, besides others). And my new material being better than that from the Danmark Exped., some further observations may be added. The rostrum is short and heavy. The lateral edges of the telson have, not one but two pairs of small spines; each

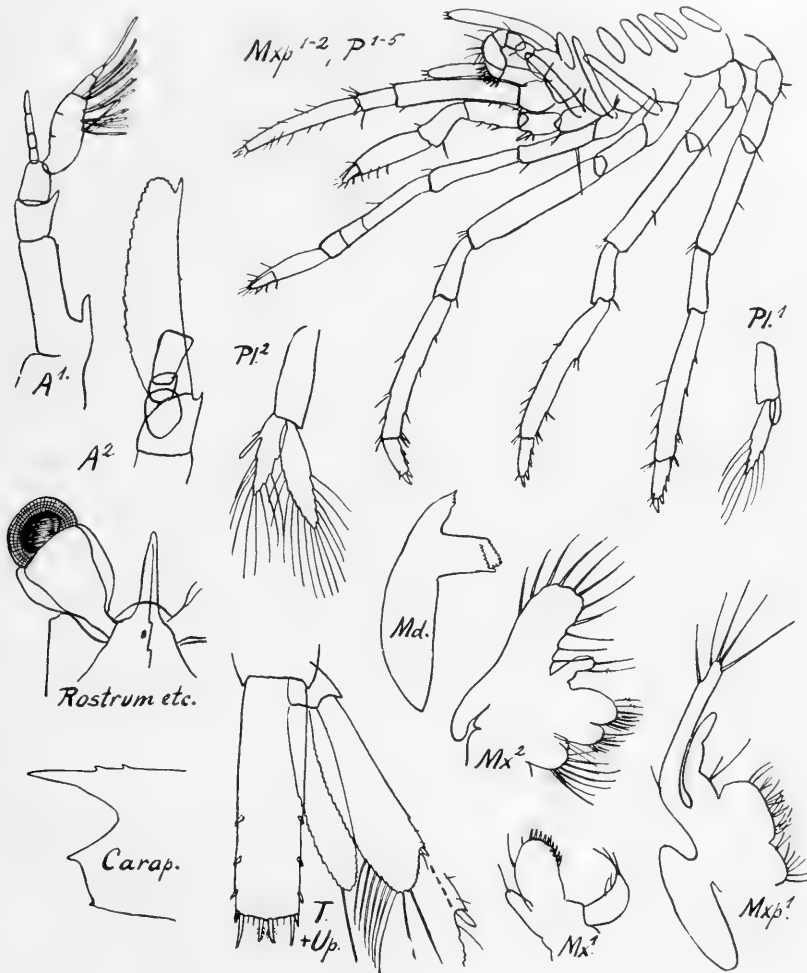


Fig. 14. *Spirontocaris Fabricii*(?) juv.

of the posterior corners is armed with 2 small spines and one large. The posterior edge of the telson has 5 large spines in the centre; some few specimens however, have here 4 large spines and one small; others again only 4 or 3 (large) spines. Between the median portion and the large spine at the corner are 4 bristles and one between each two of the large spines of the posterior edge.

The adult has exopodite on p1—p3; in the young stage, there is

a small exopodite on p1—p2; I have not been able to discover any such on p3. On the ventral side at the base of p4—p5 (i. e. at each pair) are a pair of short appendices, apparently inarticulate, which I have not been able to determine. — Length abt. 11 mm.

*Spirontocaris (Fabricii?)* juv. (Fig.14).

Bredefjord St. 61, 12,5—13 m. (22/vii), 3 spec.; St. 66, 9—11 m. (23/vii) about 15 spec.; St. 69, 16—17 m. (31/vii), 7 spec.; St. 104, 7—20 m. (5/viii), 50 spec.; St. 123, 5—8 m. (25/viii), abt. 10 spec.

At these stations, some specimens of a *Spirontocaris* juv. were taken. The shape of the telson is very characteristic. Length 10 mm.

With regard to general appearance nothing is to remark. The carapace is cylindrical, with a fairly long rostrum (nearly as long as the eye minus the faceted portion). Behind the rostrum are 2 (in cases 3) spines, but there is no supra-ocular spine. There is, however, one beneath the eye, and one on the anterior lower corner of the carapace. There is a distinct median eye. The sides of the telson are absolutely parallel, with three pair of lateral spines, the middle pair, however, in some cases lacking, while at the posterior corners there is one short spine and one long. There are two ciliated setae on the median portion of the telson's posterior edge, with two setae between these and the corner spines. Both oral parts and pereopoda show that the stage in question is fairly far advanced. There is a gill at the base of mxp 3 and p1—p5; exopodites on p1—p3.

There would seem little room for doubt that this is the young stage of *Sp. Fabricii*. There are four species without supra-ocular spines, viz.: *Sp. Gaimardii*, *Sp. Fabricii*, *Sp. pusiola* and *Sp. macilenta*. *Sp. pusiola* is out of the question here, as it is not found in the material, and *Sp. Gaimardii* may be excluded for a similar reason, as it has not been taken in Bredefjord, where all the young stages in question were procured, but only in Kvanefjord, and there but a single specimen. *Sp. macilenta* is likewise barred, being a deep sea species.

There remains then only *Sp. Fabricii*, and that the specimens in question should belong to this species is rendered the more probable by the fact that *Sp. Fabricii* was taken in great numbers everywhere, especially at those stations where the young stages were found.

*Spirontocaris* juv. (Fig. 15).



Fig. 15. *Spirontocaris* juv. Rostrum etc.

Tunugdliarfik St. 142, 14—18 m. (2/ix), 1 spec., 7 mm.

At this station a young stage was found which on the whole, as far as can be seen without dissection, corresponds entirely to the numerous specimens just mentioned of the young stage of *Sp. Fabricii* (?), differing, however, by the presence

of a supra-ocular spine, and by its inferior size (7 m.m as against 10 mm.). The telson exactly resembles that of the form mentioned.

*Spirontocaris polaris* juv. (Fig. 16).

Bredefjord St. 32, 35—37 m. (16/vii), 1 spec.; St. 48, (19/vii), 2 spec.; St. 60, 500 m. w. (22/vii), 1 spec.; St. 61, 12,5—13 m. (22/vii), about 50 spec.; St. 64, 600 m. w. (23/vii), 1 spec.; St. 66, 9—11 m. (23/vii), 15 spec.; St. 79, 30—50 m. (27/vii), 3 spec.; St. 89, 16—17 m. (31/vii), about 30 spec.; St. 104, 7—20 m. (5/viii), about 15 spec. — Bredefjord Sermilik St. 118, 500 m. w. (10/viii), 1 spec.; St. 119, 400 m. w. (10/viii), 2 spec.

I have already, in Danmark Exped., p. 518—22, Pl. 40—42, described two young stages of *Spirontocaris*; I now consider it certain that both are *Sp. polaris*, the form described on p. 521, Pl. 42, being the younger. The whole of their structure tends to show that they cannot be far from the adult stage, both the  $mxp_2$  and  $p_1$ — $p_5$  for instance, are of altogether adult form, and the telson

has, on its posterior edge (excluding the corners) 4 strong spines, a character which is only found in *Sp. polaris*.

The "Rink" material includes a large number of specimens from the localities mentioned above, corresponding in all essentials to the younger of the forms referred to.

Length in most cases 11 mm., occasionally somewhat less.

The most striking difference is the presence, in most specimens, of 3 small spines between the outermost of the four on the posterior edge of the telson and the large corner spine; these are, however, lacking in several cases, as in the specimen from the Danmark Exped. There are three spines on each of the posterior corners of the telson.

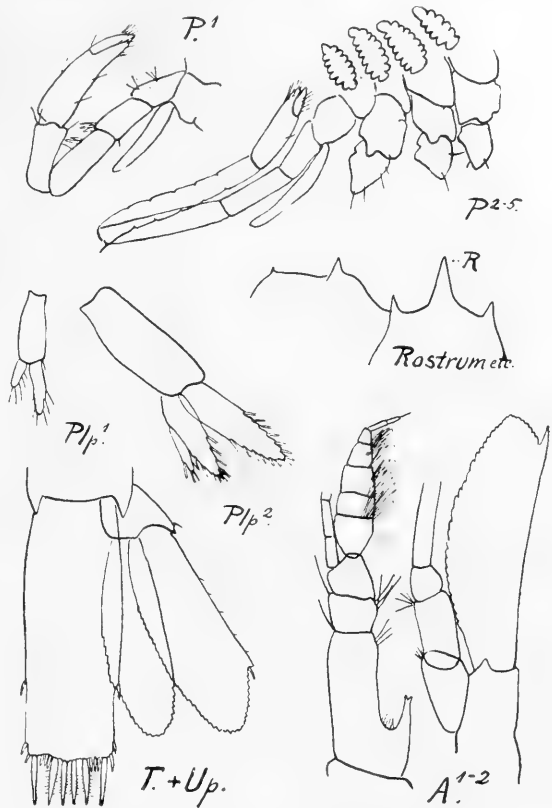


Fig. 16. *Spirontocaris polaris* juv.

My material from the "Rink" being altogether far superior to that from the Danmark Exped., I have dissected some specimens, and can now supplement the description with figures and notes. The flagellum in ant. 2 is slightly shorter than the whole animal. On the fore end of the carapace there is a tooth both above and below the 2. ant. Gills at the base of p1—p5, and a short exopodite on p1—p2; in some specimens this exopodite is much shorter than in the specimen shown. Plp1 is far smaller than the remaining pleopoda.

From the presence of exopodites on p1—p2 and the supra-ocular spine, the specimens in question cannot, according to KRØYER's Monograph on Hippolyte (= Spirontocaris) possibly belong to any other species than *Sp. polaris*.

## 20. *Pandalus borealis* Kr.

Conspectus p. 40.

### A. The adult stage.

Kvanefjord St. 3, 210—225 m., 1 spec.; St. 11, 290—320 m., 1 spec.; St. 25, 115 m., 2 spec. — Bredefjord St. 79, 30—50 m., about 10 spec.; St. 81, 110 m., 1 spec.; St. 91, 110—180 m., 1 spec.; St. 131, ring trawl, 800 m. w., 1 spec. — Skovfjord St. 152, 80—120 m., 1 ♀ with ova; St. 155, 220 (240)—ca. 400 m., 2 spec.

### B. The young stage.

Bredefjord St. 128, ringtrawl, 700 m. w., 1 spec.; St. 131, ringtrawl, 800 m. w., 1 spec.

This species, which has hitherto been found in W. Greenland from its southern point right up far as Umanak Fjord, is thus of not infrequent occurrence in the deeper parts of the fjords here investigated.

The species with ova from St. 152 was abt. 130 mm. the largest from St. 155, no less than 160 mm.

## 21. *Pandalus propinquus* G. O. Sars (Fig. 17).

Conspectus p. 43.

*Pandalus propinquus*, larva, K. Stephensen, Tjalfe-Exped. 1912, p. 117, fig. 22—31.

Kvanefjord St. 27, Nansen-net 125—100 m. (5/vii), 1 spec. (4 st.); St. 28, 400 m. w. (5/vii), 1 spec. (2. st.), 14 ccm. (3. st.), 4 ccm. (4. st.). — Bredefjord St. 31, 700 m. w. (15/vii), 5 spec. (3. st.), 1 spec. (4. st.); St. 35, 400 m. w. (16/vii), 1 spec. (3. st.), 2 spec. (4. st.); St. 47, 600 m. w. (18/vii), 2 spec. (3. st.), 5 spec. (4. st.); St. 50, 100 m. w. (20/vii), 1 spec. (3. st.); St. 59, 300 m. w. (22/vii), 1 spec. (2. st.), 10 spec. (4. st.); St. 60, 500 m. w. (22/vii), 2 spec. (3. st.), 3 spec. (4. st.); ?St. 61, 12,5—

13 m. (22/vii), 1 spec. (5. st.?, defective); St. 64, 600 m. w. (23/vii), 3 spec. (4. st.); St. 73, 300 m. w. (25/vii), 1 spec. (4. st.); St. 86, 100 m. w. (31/vii), 1 spec. (4. st.); St. 100, 500 m. w. (5/viii), 2 spec. (4. st.); St. 102, 400 m. w. (5/viii), 1 spec. (4. st.); St. 106, 100 m. w. (7/viii), 1 spec. (4. st.); St. 126, 800 m. w. (26/viii), 1 spec. (4. st.), 3 spec. (5. st.); St. 128, 700 m. w. (26/viii), about 10 spec. (4. st.), about 50 spec. (5. st.), 1 spec. (6. st.); St. 129, 800 m. w. (26/viii), 4 spec. (4. st.), about 15 spec. (5. st.); St. 131, 800 m. w. (28/viii), about 10 spec. (5. st.); St. 132, 700 m. w. (28/viii), 2 spec. (4. st.), about 10 spec. (5. st.); St. 133, 600 m. w. (28/viii), about 15 spec. (5. st.).

In the "Tjalfe" Exped., p. 124 seq., I advanced reasons for supposing this larva to belong to *Pandalus propinquus*. This I now consider may be regarded as absolutely certain, as one of the specimens (6. stage?) from St. 128 exhibits an excellent *Pandalus*-character. The specimen in question measured 16 mm. to the base of the rostrum (which was lacking) and is thus remarkable large for a Decapod larva. It closely resembles 5. stage, differing, however, in some points. The pleopoda are longer, with natatory setae (also found in 5. stage). The most important feature, however, is that the left p2 is considerably longer than the right; in both, the distal end of the 5. joint is separated off as a distinct joint. This fact, that the left p2 is longer than the right, is a decided *Pandalus*-character, and as the larva does not agree with any of these described by Sars, it cannot be other than *Pandalus propinquus*.



Fig. 17. *Pandalus propinquus*, p1—p2 (of 6. stage?).

All stages have a spine under the 1. joint of the peduncle in ant.

1. The chelae of p1—p2 in the 6. stage will be seen from my figures.

The 1. stage is not found in the material from the "Rink". The 2. stage was taken on the 5/vii ("Tjalfe" 7/vii to 16/vii); 3. stage 5/vii to 22/viii ("Tjalfe" 7/vii to 16/vii); 4. stage 5/vii to 28/viii ("Tjalfe" 17/viii); 5. stage 22/vii to 28/viii ("Tjalfe" 29/viii); and the 6. stage (?) 26/viii. The results from the "Rink" thus agree well enough with those from the "Tjalfe".

The fact that no grown specimens of *Pandalus propinquus* were taken by the "Rink" cannot, I think, be cited in disproof of my determination. A species of such considerable size and rapid movement would certainly have no difficulty in escaping from the ringtrawl; it must be borne in mind that the "Rink" could move but very slowly ringtrawl or dredge working at such a depth.

As will be seen from my list, the larva was only taken in the Kvane-fjord close to the mouth, whereas it was found far up in Bredefjord, though not in Sermilik.

22. *Pasiphaë tarda* Kr.

Conspectus p. 47, 424.

## A. The adult stage.

Bredefjord St. 63, Nansen-net, 450—350 m., 1 spec.; St. 126, ringtrawl, 800 m. w., about 10 spec.; St. 129, ringtrawl, 800 m. w., 1 spec.; St. 131, ringtrawl, 800 m. w., 7 spec.

## B. The larva (Fig. 18).

Bredefjord St. 126, ring trawl, 800 m. w., 1. larval stage, 1 spec., and older larval stage, 2 spec.

We have thus from this station 1 spec. of the youngest larval stage, and 2 of a somewhat older stage.

The youngest stage agrees entirely, as far as I have been able to see without dissection, with BJÖRCK's description of this stage in Arkiv f. Zoologi, vol. 7, Nr. 15, 1911, p. 4 seq. (Bidrag til Kännedomen om De-

capodernas Larveutveckling, 1, *Pasiphaea*); the rostrum, however, is less pointed on the whole, being rounded with a sharply defined point, as here shown in the older stage.

This older stage is of an age between that of the oldest and the youngest described by BJÖRCK l. c. Length abt. 10mm. which corresponds well enough to the length of 9mm. for the youngest stage, and 11—12 for the oldest (BJÖRCK). I must here admit that my drawings are not as good as I could have wished. On being placed in glycerine, which I always use for specimens to be drawn, the legs swelled up in places, shrinking in others, so that the contours are hardly quite correct; in addition, I

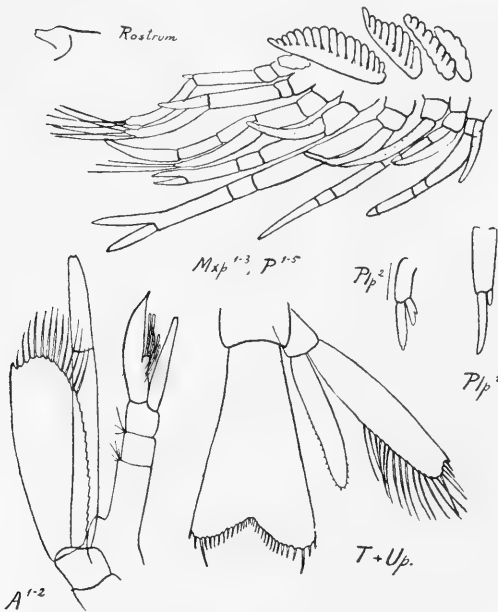


Fig. 18. *Pasiphaë tarda*. Larva in intermediate stage.

found considerable difficulty in determining the articulation. The shape of the antennae is between that of the 1. and that of the last larval stage. There is a very small exopodite on mxp 1, and a slightly larger one on mxp 2; i. e. about the same as in the youngest stage. Mxp 3 is about the same length as the foregoing, but the exopodite is longer. With regard to p1—p5, nothing particular to remark, save that p5 is, as in the adult form, longer than p4. There are, however, at least



5 gills, the foremost and hindmost simple plates, the others have distinct transverse folds; the foremost is situated at the base of mxp3, the others at p1—p4. As to whether gills were present by the other limbs I was unable to determine.

The shape of the uropoda corresponds to that in BJÖRCK's figure of the uropoda in the oldest larva; there are, however, no ciliated setae on the endopodite, but small spines. The shape of the telson is similar to that in the case of the youngest larva, but narrower; there appear to be 16 pairs of spines on the posterior edge. The outermost of these, however, do not agree with BJÖRCK's description. He says that the outermost three at each corner are ciliated setae; this was not the case with my specimens, at least as far as I could see.

My larvae were taken on the 26th August, which fully agrees with BJÖRCK's description, where we read (l. c., p. 12) that he found the intermediate stage of this larva in the Koster Fjord (W. of Sweden) on the 15th August.

### Euphausiacea.

#### 23. *Meganyctiphanes norvegica* M. Sars.

Conspectus p. 55.

*Nyctiphanes norvegica* Koelbel, Die oesterreich. Polar-Station Jan Mayen, 1886, p. 48, Pl. 3, fig. 7—10.

*Meganyctiphanes* — Kramp, Schizop.; Bull. Trimestriel ... bureau conseil permanent internat. explorat. de la mer, Résumé planktonique, 3. partie, 1913, p. 540, Pl. C (distrib., biol.).

Bredefjord St. 63, Nansen-net, 250—200 m., 1 spec.; St. 64, 600 m. w., 5 spec. — Bredefjord Sermilik St. 118, 500 m. w., 5 spec.; St. 119, 400 m. w., about 25 spec. — Bredefjord St. 129, 800 m. w., 3 spec.; St. 131, 800 m. w., 3 spec.; St. 133, 600 m. w., 1 spec.

This species is thus not being uncommon in Bredefjord and Sermilik at a depth of from 200—400 m. This is a point of considerable interest, as the species hitherto known only from the extreme southern portion of W. Greenland.

#### 24. *Thysanoëssa inermis* Kr.

Conspectus p. 56, 421.

*Thysanoëssa inermis* Kramp, Schizop.; Bull. Trimestriel ... bureau conseil permanent internat. explorat. de la mer, Résumé planktonique, 3. partie, 1913, p. 544, Pl. C, II, 3—4 (distrib., biol.).

Kvanefjord St. 26, Nansen-net., 200—150 m., 1 spec. — Bredefjord St. 31, 700 m. w., 1 spec.; St. 35, 400 m. w., 2 spec.; St. 47, 600

m. w., 2 spec.; St. 60, 500 m. w., 1 spec.; St. 64, 600 m. w., 2 spec.; St. 65, 500 m. w., 1 spec.; St. 72, 400 m. w., 1 spec.; St. 100, 500 m. w., 22 spec.; St. 102, 400 m. w., 8 spec. — Bredefjord Sermilik St. 118, 500 m. w., 1 spec.; St. 119, 400 m. w., 5 spec. — Bredefjord St. 128, 700 m. w., 8 spec.; St. 129, 800 m. w., 8 spec.; St. 131, 800 m. w., 11 spec.; St. 132, 700 m. w., 18 spec.; St. 133, 600 m. w., 27 spec.

This species is thus fairly numerous, especially in Bredefjord, in its deeper parts (200—400 m.). From W. Greenland, it has been taken hitherto at certain places, as far as Lille Karajakfjord (abt. 71° N.); with the exception of this, however, not in the fjords at all. It is, with *Thysanoëssa longicaudata*, the most numerous Euphausiid in the area investigated.

## 25. *Thysanoëssa longicaudata* Kr.

Conspectus p. 57.

*Thysanoëssa longicaudata* Kramp, Schizop.; Bull. Trimestriel ... conseil permanent internat. exploration de la mer, Résumé planktonique, 3. partie, 1913, p. 546, Pl. C, II, 1. (distrib., biol.).

Bredefjord St. 31, 700 m.w., 12 spec.; St. 35, 400 m.w. 2 spec.; St. 47, 600 m. w., 4 spec.; St. 60, 500 m. w., 7 spec.; St. 63, Nansen-net, 450—350 m., 1 spec., and 550—450 m., 2 spec.; St. 64, 600 m. w., about 15 spec.; St. 65, 500 m. w., 4 spec.; St. 94, Nansen-net, 250—200 m., 1 spec., and 350—250 m., 1 spec.; St. 100, 500 m. w., about 15 spec.; St. 102, 400 m. w., 1 spec. — Bredefjord Sermilik St. 118, 500 m. w., 1 spec. — Bredefjord St. 126, 800 m. w., about 50 spec.; St. 128, 700 m. w., about 10 spec.; St. 129, 800 m. w., 14 ccm.; St. 131, 800 m. w., about 50 ccm.; St. 132, 700 m. w., about 15 spec.; St. 133, 600 m. w., about 15 spec.

This species is thus very common in the deeper parts (550—200 m.) of Bredefjord; it is generally found together with *Th. inermis*, but appears to go somewhat deeper down, and has the same distribution in the waters at W. Greenland.

## 26. *Thysanoëssa Raschii* M. Sars.

Rhoda Raschii, Conspectus p. 59, 421.

*Thysanoëssa Raschii* H. J. Hansen, Bull. Inst. Monaco, Nr. 210, 1911, p. 42.

— — Kramp, Schizop.; Bull. Trimestriel ... conseil permanent internat. explorat. de la mer, Résumé planktonique, 3. partie, 1913, p. 547, Pl. C, II, 2. (distrib., biol.).

Bredefjord St. 31, 700 m. w., 1 spec.; ?St. 48, 1 spec.; St. 63, Nansen-net, 250—200 m., 1 spec.; St. 102, 400 m. w., 1 spec.

The distribution of this species in W. Greenland also resembles that of those just mentioned; it has been found in Lille Karajakfjord (VANHÖFFEN 1897) and in Northern Strømfjord by Dr. NORDMANN in 1911.

**Euphausiacea, spp. juv. et larvae.**

Bredefjord St. 31, 700 m. w., 2 spec.; St. 50, 100 m. w., 3 spec.; St. 60, 500 m. w., 1 spec.; St. 86, 100 m. w., 1 spec.; St. 94, Nansen-net, 10—0 m., about 10 spec., 50—25 m., about 10 spec., and 75—50 m., 3 spec.; St. 126, 800 m. w., 2 spec.; St. 132, 700 m. w., 1 spec. — Skovfjord St. 154, Nansen-net, 150—125 m., 2 spec., and 200—150 m., 2 spec.

The material contains at least 3 species.

**Mysidacea.**

**27. Boreomysis arctica Kr.**

Conspectus p. 67.

Bredefjord St. 30, Nansen-net, 450—350 m. 1 spec.; St. 31, 700 m. w., 5 spec.; St. 45, 430—450 m. (dredge), 1 spec.; St. 63, Nansen-net, 550—450 m., 2 spec., and 450—350 m., 5 spec.; St. 94, Nansen-net, 550—450 m., 1 spec., *ibid.* 450—350 m., about 15 spec., and 350—250 m., about 10 spec.; St. 98, 520—560 m. (dredge), 2 spec. — Bredefjord Sermilik St. 115, 500 m. (dredge), 1 spec.; St. 118, 500 m. w., 1 spec. — Bredefjord St. 126, 800 m. w., about 75 spec.; St. 129, 800 m. w., about 35 spec.; St. 130, 900 m. w. (dredge), 1 spec.; St. 131, 900 m. w., about 75 spec.

This is a very interesting find. KRÖYERS' original specimen was from W. Greenland, precise locality not stated; otherwise, it has only been recorded from W. Greenland by VANHÖFFEN from Lille Karajakfjord (abt. 71° N.). Judging from the "Rink" material, it would seem to be very numerous in Bredefjord (*vide* especially St. 126 and 131) at depths beyond 250 m. The material includes large specimens of 25—30 mm. and smaller ones of abt. 10 mm.; these latter are probably young ones of the same summer when caught. None of the grown specimens had ova.

**28. Mysis oculata Fabr.**

Conspectus p. 77, 425.

*Mysis oculata* E. Lönnberg, Ueber eine Zwischenform zwischen *M. ocul.* u. *M. relicta*; Zool. Anzeiger, vol. 26, 1903.

— — Sven Ekman, Stud. ub. marine Relikte d. nordeurop. Binnengewässer III, Auftreten v. *Limnocalanus grimaldii* u. *Mysis oculata* im Meere, besonders im Ostseebecken; Internat. Revue d. gesamt. Hydrogr. u. Hydrobiol., vol. 6, Heft 6, 1914, p. 509 seq.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 48, 3 spec. (2 with *Dajus Mysidis*); St. 61, 12,5—13 m., about 10 spec. (2 with *Dajus Mysi-*

dis); St. 62, 10—15 m., 4 spec.; St. 66, 9—11 m., about 20 spec.; St. 89, 16—17 m., about 10 spec. (3 with *Dajus Mysidis*); St. 104, 7—20 m., about 10 spec. — Bredefjord Sermilik St. 118, 500 m. w., 1 spec.; St. 119, 400 m. w., 1 spec. — Bredefjord St. 123, 5—10 m., about 10 spec.; St. 127, 10—15 m., 4 spec. — Tunugdliarfik St. 142, 14—18 m., about 20 spec.

It is remarkable that this extremely common arctic species was not found at all in the Kvanefjord. Note St. 118 and 119, where it was taken by the ringtrawl at 500 and 400 m. w.

### 29. *Mysis mixta* Lilljeborg.

Conspectus p. 79, 425.

*Mysis mixta* Kramp, Schizop.; Bull. Trimestriel publié par le bureau du conseil permanent internat. pour l'explorat. de la mer, Résumé planktonique, 3. partie, 1913, p. 552, Pl. CV, 2. (Biol., distrib.).

— — S. Ekman, Internat. Revue d. gesamt. Hydrogr. u. Hydrobiol., vol. 6, Heft 6, 1914, p. 509 seq.

— — Blegvad, Undersøg. over Næring og Ernæringsforhold hos Havbundens invertebrate Dyresamfund i danske Farvande. Med et Tillæg; Beretn. Danske Biolog. Station, vol. 22, 1914, p. 103, and Tillæg A, p. 36 (food etc.).

Bredefjord St. 31, 700 m. w., 2 spec.; St. 79, 30—50 m., 1 spec.; St. 104, 7—20 m., 1 spec.; St. 123, 5—10 m., 2 spec.; St. 126, 800 m. w., 2 spec.; St. 129, 800 m. w., 6 spec.; St. 131, 800 m. w., 6 spec.; St. 132, 700 m. w., 2 spec. — Tunugdliarfik St. 142, 14—18 m., several spec. — Skovfjord St. 145, 10—35 m., 1 spec.; St. 154, Nansen-net, 270 (bottom)—200 m., 2 spec.

This species has not hitherto been found in W. Greenland S. of Holstensborg (abt. 66° N.). Note the catches made with the ringtrawl and with the Nansen-net at St. 154.

### Cumacea.

#### 30. *Diastylis Rathkei* Kr.

Conspectus p. 86, 420, 422.

*Diastylis Rathkei* Blegvad, Beretning Danske Biolog. Station, vol. 22, 1914, p. 101, Tillæg p. 35 (food etc.).

Bredefjord St. 123, 5—10 m., 1 spec.; St. 127, 10—15 m., about 15 spec.; St. 131, 800 m. w., 1 spec. (♀).

It is remarkable that the specimen taken in the ringtrawl was a ♀, as these are generally less mobile than the ♂.

#### 31. *Diastylis scorpioides* Lepech.

Conspectus p. 88.

Bredefjord St. 70, 225—290 m., 1 spec.; St. 127, 10—15 m., about 10 spec. — Skovfjord St. 143, 65—90 m., 1 spec.

32. *Diastylis Goodsirii* Bell.

Conspectus p. 90.

Bredefjord St. 97, 250—280 m., 1 spec. — Skovfjord St. 143, 65—90 m., 1 spec.

Not previously known from W. Greenland S. of abt.  $65\frac{1}{2}^{\circ}$  N.

**Amphipoda.**33. *Hyperia medusarum* O. Fr. Müller.

Conspectus p. 96.

Bredefjord St. 132, 700 m. w., 1 spec.

34. *Hyperia galba* Mont.

Conspectus p. 97.

Bredefjord St. 126, 800 m. w., 1 spec.

This locality is not without interest, as little is known concerning the distribution of this species in Greenland, owing to the fact of its having hitherto been confused with *Parathemisto obliqua*, *vide* Conspectus.

35. *Euthemisto libellula* Mandt.

Conspectus p. 100.

Kvanefjord St. 27, Nansen-net, 250—200 m., 1 spec.; St. 28, 400 m. w., 4 spec. — Bredefjord St. 29, surface, 3 spec.; St. 31, 700 m. w., about 20 spec.; St. 35, 400 m. w., about 15 spec.; St. 47, 600 m. w., 7 spec.; St. 48, 1 spec.; St. 60, 500 m. w., 1 spec.; St. 64, 600 m. w., 1 spec.; St. 72, 400 m. w., 12 spec.; St. 100, 500 m. w., 4 spec.; St. 108, 300 m. w., 3 spec. — Bredefjord Sermilik, St. 118, 500 m. w., about 20 spec.; St. 119, 400 m. w., about 20 spec. — Bredefjord St. 128, 700 m. w., 1 spec.; St. 129, 800 m. w., 2 spec.; St. 131, 800 m. w., 1 spec.; St. 132, 700 m. w., about 15 spec.; St. 133, 600 m. w., 6 spec.

This essentially arctic species has thus been found at nearly all the plankton stations, and appears to be more or less evenly distributed over all depths except at the surface itself. Most of the specimens are small, abt. 10 mm., some few, however, reaching a size of over 25 mm. (St. 31, 35, 119). It is interesting to note that it penetrates right up into the Bredefjord Sermilik.

36. *Euthemisto compressa* Goës.

Conspectus p. 102.

Bredefjord St. 30, Nansen-net, 250—200 m., 1 spec., and 350—250 m., 1 spec.; St. 31, 700 m. w., 8 spec.; St. 35, 400 m. w., about 20 spec.; St. 47, 600 m. w., about 20 spec.; St. 48, 1 spec.; St. 60, 500 m. w., 12 spec.; St. 64, 600 m. w., 6 spec.; St. 65, 500 m. w., 8 spec.; St. 72, 400 m. w., 11 spec.; St. 73, 300 m. w., 1 spec.; St. 84, 200 m. w., 1 spec.; St. 86, 100 m. w., 1 spec.; St. 94, Nansen-net, 75—50 m. w., 1 spec.;

St. 100, 500 m. w., 12 ccm.; St. 102, 400 m. w., 3 spec.; St. 106, 100 m. w., 1 spec.; St. 108, 300 m. w., 4 spec. — Bredefjord Sermilik St. 118, 500 m. w., 2 spec.; St. 119, 400 m. w., about 15 spec. — Bredefjord St. 126, 800 m. w., 12 spec.; St. 128, 700 m. w., 14 ccm.; St. 129, 800 m. w., 15 ccm.; St. 131, 800 m. w., 15 spec.; St. 132, 700 m. w., 8 ccm.; St. 133, 600 m. w., 8 ccm. — Skovfjord St. 154, Nansen-net, 270 m. (bottom)—200 m., 3 spec.

Second only to *Parathemisto obliqua*, this species is the most widely distributed and most common Hyperid. Of the total quantity of Hyperidae, *Parathemisto obliqua* represents nearly three-fourths; the present species makes up the greater portion of the remaining fourth.

### 37. *Euthemisto bispinosa* Boeck.

Conspectus p. 104.

Bredefjord St. 31, 700 m. w., 9 spec.; St. 47, 600 m. w., 5 spec.; St. 60, 500 m. w., 6 spec.; St. 64, 600 m. w., 4 spec.; St. 65, 500 m. w., 1 spec.; St. 72, 400 m. w., 1 spec.; St. 100, 500 m. w., 2 spec. — Bredefjord Sermilik St. 119, 400 m. w., 1 spec. — Bredefjord St. 128, 700 m. w., 3 spec.; St. 129, 800 m. w., 4 spec.; St. 131, 800 m. w., 1 spec.; St. 132, 700 m. w., 3 spec.; St. 133, 600 m. w., 4 spec.

This species was thus only taken by the "Rink" at considerable depths, 400—800 m. w.; otherwise, it has not infrequently been taken at the surface itself. It is found right up in Bredefjord Sermilik (St. 119).

### 38. *Parathemisto obliqua* Kr.

Conspectus p. 104.

Kvanefjord St. 26, Nansen-net, 200—150m., 1 spec.; ?St. 27, Nansen-net, 125—100m., 1 spec. juv.? — Bredefjord St. 30, Nansen-net, 350—250 m., 2 spec., and 550—450 m., 6 spec.; St. 31, 700 m. w., 15 ccm.; St. 35, 400 m. w., 13 ccm.; St. 47, 600 m. w., 12 ccm.; St. 48, about 25 spec., St. 59, 300 m. w., 3 spec.; St. 60, 500 m. w., 15 ccm.; St. 63, Nansen-net, 125—100 m., 2 spec., 150—125 m., 2 spec., 200—150 m., 2 spec., 250—200 m., 5 spec.; 350—250 m., 2 spec., 450—350 m., 1 spec.; St. 64, 600 m. w., 8 ccm.; St. 65, 500 m. w., 8 ccm.; St. 72, 400 m. w., 30 ccm.; St. 73, 300 m. w., 12 ccm.; St. 85, surface, 1 spec.; St. 94, Nansen-net, 100—75 m., 2 spec.; 125—100 m., 5 spec., 150—125 m., 4 spec., 200—150 m., 1 spec., 250—200 m., 5 spec., 350—250 m., 2 spec., 450—350 m., 2 spec.; St. 100, 500 m. w., 30 ccm.; St. 102, 400 m. w., 15 ccm.; St. 108, 300 m. w., about 20 spec. — Bredefjord Sermilik St. 118, 500 m. w., 50 ccm.; St. 119, 400 m. w., 50 ccm. — Bredefjord St. 126, 800 m. w., 7 ccm.; St. 128, 700 m. w., 15 ccm.; St. 129, 800 m. w., 30 ccm.; St. 131, 800 m. w., 45 ccm.; St. 132, 700 m. w., 50 ccm.; St. 133, 600 m. w., 40 ccm. — Skovfjord St. 137, 200—150 m., 1 spec., and 250—200 m., 7 spec.

As seen from the hauls made by the Nansen-net (St. 63, 94) this species lives in the fjords at depths of from 75 to at least 450 m. It is by far the most common and numerous of all Hyperiidæ, frequently amounting to over three-fourths of the total Hyperiidæ taken at a single station. This is somewhat contrary to what might have been expected, as it had not hitherto been taken in any great quantity in Greenland waters.

× 39. *Scina borealis* G. O. Sars.

*Clydonia borealis* G. O. Sars, Oversigt af Norges Crust. 1; Christiania Vid. Selsk. Forhandl. 1882, Nr. 18, p. 76, Pl. 3, fig. 1.

× *Scina* — G. O. Sars, Account of the Crust. of Norway, vol 1, 1895, p. 20, Pl. 8.

— — Stebbing, Biscayan Plankton 2; Transact. Linn. Soc., London, ser. 2, Zool., vol. 10, pt. 2, 1904, p. 28 (*ubi lit. et syn.*).

Bredefjord St. 94, Nansen-net, 450—350 m., 1 spec.; St. 131, 800 m. w., 2 spec.

This species is new for Greenland. I have, however, in the "Tjalfe" exped. already made mention of a *Scina* sp. which being defective, could not be determined; possibly it was the same species.

Distribution. *Vide* especially Tattersall, Amphip. Ireland (Fisheries N. Ireland, Sci. Investig. 1905, pt. 4 (1906), p. 9—10) where it is recorded from the eastern Atlantic, from Lofoten to the Azores and Canaries, as also the Mediterranean; not previously known, however, from the western part of the Atlantic. Since then, A. O. WALKER (Transact. Linn. Soc., London, ser. 2, Zool., vol. 13, 1909—10, p. 53) has recorded it from the Indian Ocean, 25—1200 fathoms.

40. *Socarnes VahlII* Kr.

Conspectus p. 109.

Bredefjord St. 36, 29—100 m., about 15 spec.; St. 78, 30—50 m., 10 spec. — Skovfjord St. 156, 70—140 m., 4 spec.

41. *Aristias tumidus* Kr.

Conspectus p. 114.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 78, 30—50 m., 2 spec.

42. *Anonyx nugax* Phipps.

Conspectus p. 115.

Bredefjord St. 46, 20—30 m., 1 spec.; St. 48, 12 spec.; St. 62, 10—15 m., 4 spec.; St. 78, 30—50 m., 7 spec.; St. 89, 16—17 m., 4 spec.; St. 104, 7—20 m., 7 spec.; St. 123, 5—10 m., 3 spec.; St. 127, 10—15 m., about 15 spec. — Skovfjord St. 136, 6 m., 2 spec. — Tunugdliarfik St. 142, 14—18 m., 1 spec. — Skovfjord St. 156, 70—140 m., 1 spec.

× 43. *Pseudalibrotus Nanseni* G. O. Sars?

*Pseudalibrotus Nanseni* G. O. Sars, Crust.; Nansen, The Norweg. North Polar Exped. 1893—96, Sci. Results, vol. 1, Nr. 5, 1900, p. 26, Pl. 4—5.

Bredefjord Sermilik St. 118, 500 m. w., 5 spec.; St. 119, 400 m. w., 1 spec. — Bredefjord St. 126, 800 m. w., 2 spec.

The material from these stations includes some specimens of an Amphipod belonging to the genus *Pseudalibrotus*. With the large 2. joint of p7 they resemble *P. Nanseni*, but differ in various points. Hardly any of them are full grown, save possibly that from St. 119.

I am inclined to think that the specimens in question must be young individuals of *P. Nanseni*, the resemblance being so great that the differences may presumably be taken as due to the fact that the specimens were not fully grown. A more serious objection, however, is the locality. Sars' original specimens were taken "about 80° latitude, north of the New Siberian Islands. The specimens seem not to have been taken by the aid of the tow-net, but on bait hung down from the ship. Moreover, some young specimens . . . occurred in a sample much farther west, near the 85th degree of latitude"; these were thus from a distinctly arctic locality. My specimens, on the other hand, were taken pelagically, under boreal conditions. Although this fact need not in itself be of very great importance, it would hardly support the suggestion of their belonging to the same species as that described by Sars; in the absence of further material, however, I think we cannot do better than record the specimens in question as *Pseudalibrotus Nanseni*?

For clearness' sake I have here considered the specimens from each station separately, numbering the 5 from St. 118 as from 1 to 5.

Station 118, specimen Nr. 1 (Fig. 19), ♂, length 14 mm. Being in doubt as to the determination, I have here drawn all appendages, after dissection, and will now point out what I consider the most important characters; I am, however, inclined to consider the deviation from Sars' description as due to difference in size. (My specimen is 14 mm.; Sars' largest — the one shown in his figure? — 20 mm.).

On the whole, the resemblance is very good, and I now mention differences only. Lateral lobes on the cephalon somewhat more pointed than shown by Sars; as to how far the eyes are "contracted above" (Sars) I am unable to state with certainty, as they have now lost all colour, and are therefore difficult to draw with accuracy; the ocelli at the edge are particularly indistinct. The postero-lateral corner of the 3. epimeral plate in the metasome is more pointed than shown by Sars, the point itself especially being more sharply defined.

In ant. 1, the accessory flagellum has 4 joints (Sars: 4—5), the flagellum has 45 (Sars: amounting to about 50 in all), it is furnished with setae, though I have not been able to discover calceoli, possibly



on account of the small size of the specimen. In ant. 2, the flagellum has 49 joints (SARS "about 60") furnished with calceoli; in the case of the distal portion, however, only on every alternate joint.

P1—p7 agree very well with SARS' figures, here also, however, there are some few small points of difference. The 1. joint of p1 is more

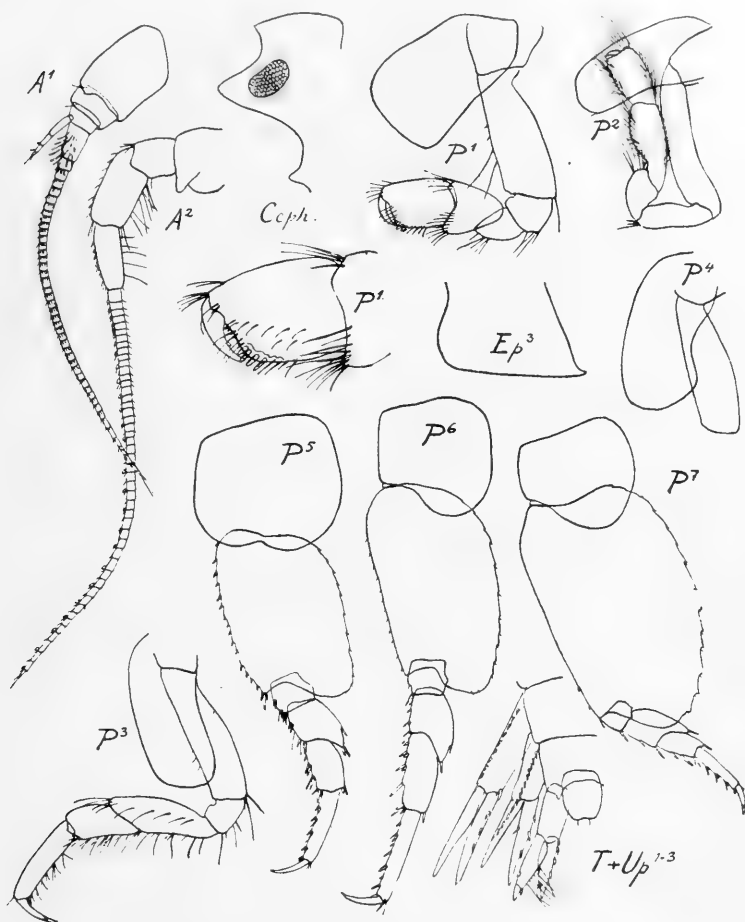


Fig. 19. *Pseudalibrotus Nansenii* Nr. 1 (♂).

rounded at the anterior corner than shown by SARS, but the 6. joint is of the same shape as there, the lower (posterior) corner being less obliquely cut off than in other species. The 1. joint in p2 is somewhat broader than stated by SARS, and the same applies to the 1. joint in p3—p4. P5—p7 also agree very well with SARS' figure, but in p6, the 4. joint especially is not a little stronger. The uropoda exhibit various differences in the arrangement of the spines, this is most distinctly shown in urop. 3, where there are no ciliated setae on the inner ramus

in my specimen. The telson is much narrower at the base than shown by Sars.

St. 118, specimen Nr. 2 (Figs. 20—21), ♀, length 16 mm. With regard to this specimen, the same may be said as of the foregoing; it

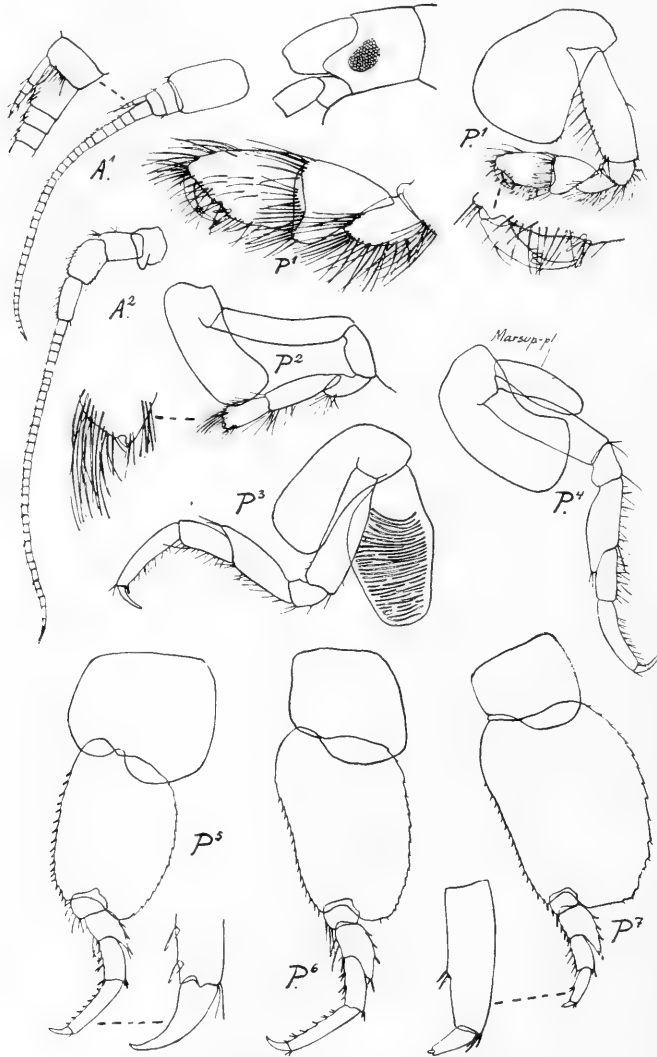


Fig. 20. *Pseudalibrotus Nanseni* Nr. 2 (♀).

resembles *Pseudalibrotus Nanseni* in p7 but differs somewhat in other features. The small marsupial plates (shown on p4) mark the specimen as a ♀; it is not mature, however, as the marsupial plates lack the usual bristles along the edge.

The lateral lobes of the cephalon are slightly shorter and less poin-

ted than in the foregoing specimen. The postero-lateral corner of the 3. epimeral plate in the metasome is of almost the same shape as shown by Sars, being less drawn out at the point than the foregoing.

The antennae are somewhat shorter than in the ♂ (specimen Nr. 1) and calceoli are of course altogether absent. In ant. 1, the accessory flagellum has 4 joints, the flagellum 33. In ant. 2, the flagellum has 36 joints. In p1 the 1. joint is very strongly curved in front, far more so than in Sars' and the foregoing specimen. The distal edge of the 6.

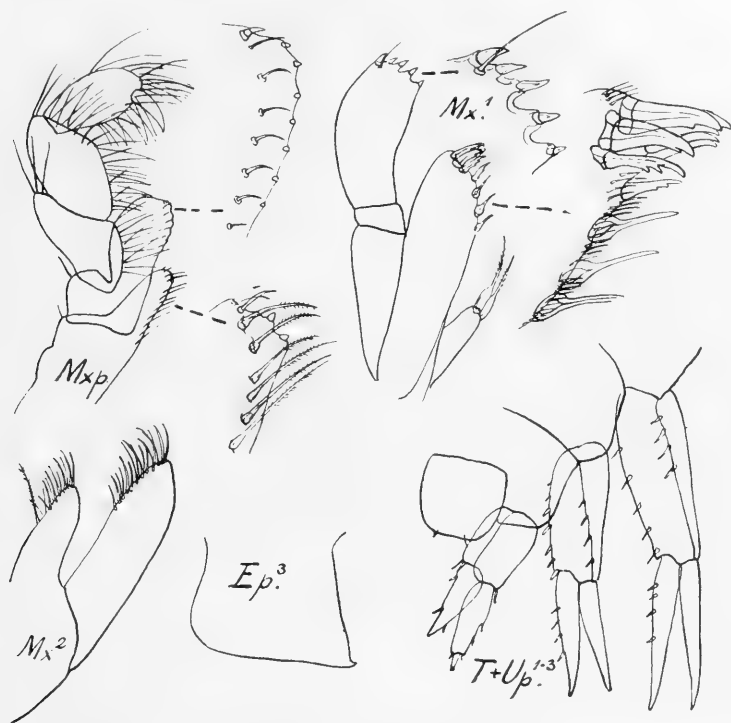


Fig. 21. *Pseudalibrotus Nanseni*, Nr. 2.

joint is also more obliquely cut. P2 is more slender than in the ♂ and the 1. joint slightly broader towards the point. With regard to p3—p4 nothing particular to remark, these answering entirely to the corresponding legs in the ♂. In p5 on the other hand, the 3.—7. joints are somewhat shorter and the dactylus on p5—p6 and especially p7 distinctly shorter and heavier. In p6—p7 also, the 3.—7. joints are slightly shorter than in the ♂. A remarkable feature is the slight spinous arrangement on anterior edge of the 6. joint in p7. Some of the oral parts are here drawn, to show the arrangement of spines; they agree, however, entirely with Sars' figure of *P. Nanseni*. The uropoda are slightly heavier, but with fewer spines than in the ♂. The fact of there being no ciliated setae on urop. 3, might possibly be taken

as indicating that the specimen in question could not be ♀ of the same species as the ♂ above described; in order to make certain therefore,



Fig. 22. *Pseudalibrotus littoralis* ♂, Up. 3 (Danmark-Exped. St. 17).

I investigated this feature in the case of *P. littoralis*, the only species of which I had access to both male and female. As will be seen from my figure (fig. 22), the urop. 3 of *P. littoralis* ♂ has setae both on the outer and the inner ramus, whereas in the ♀, these are only found on the outer (I disregard the 3 separate setae on the inner ramus; *vide* Sars, Account, vol. 1, Pl. 35). The ♂ above described having only a few such setae, it would seem that the fact of none such being found in the ♀ here in question, need not count against the probability of both belonging to one and the same species. The telson in unusually broad.

St. 118, specimen Nr. 3 (Fig. 23). Young ♀, 14 mm. With regard to determination of this and the following two specimens, I am far more doubtful than in the case of the two foregoing. I am most inclined to consider it as a very young ♀ of *P. Nanseni*. The small marsupial plates shown for p5 lack setae at the edge. The cephalon resembles entirely that

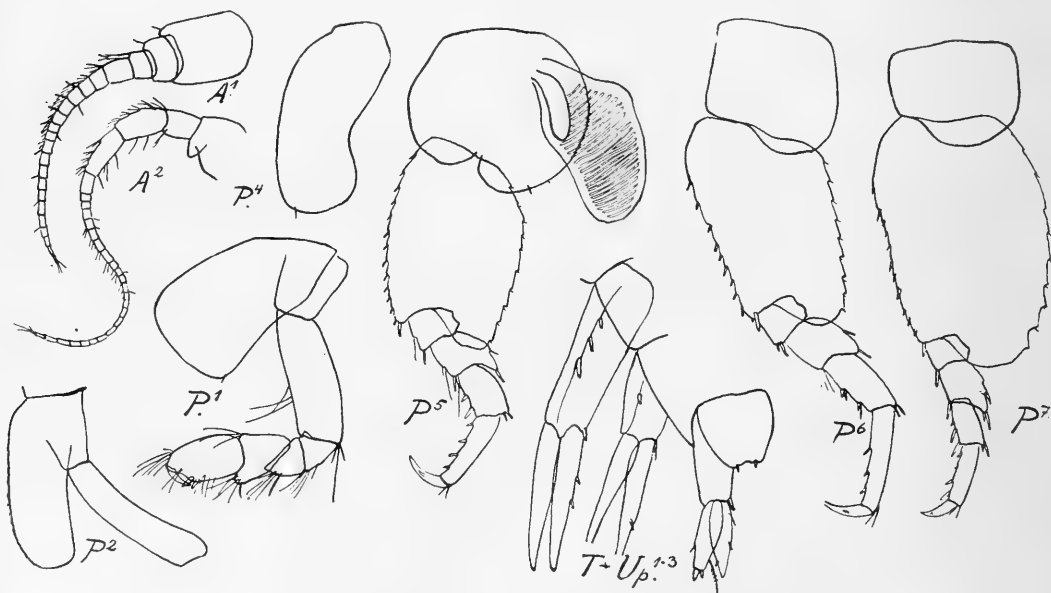


Fig. 23. *Pseudalibrotus Nanseni* Nr. 3 (young ♀).

of the ♀ above described. Postero-lateral corners of the 3. epimeral plate of the same shape as in the ♂ above mentioned (fig. 19). The antennae are short; in ant. 1, the accessory flagellum has only 1 joint, and the flagellum only 19; in ant. 2, the flagellum has 26.

In p1, the 1. joint resembles most the corresponding one in the ♂ mentioned above, but the 6. joint is more obliquely cut, nearly corresponding to that in the ♀ (Nr. 2). In p2, the 1. joint is of the same shape as in Sars' figure of *P. Nanseni*. P3 is exactly like that corresponding in Nr. 1—2. In p4, on the other hand, the 1. joint is narrower, and the lower posterior corner more rounded. P5—p7 agree very well with Sars' figures, but the 2. joint in p7 is comparatively short and broad, the dactylus on p5—p7 somewhat too heavy. With regard to the uropoda there is nothing to remark save that the spinous arrangement is even weaker than in Nr. 1—2. The outer ramus of urop. 3,

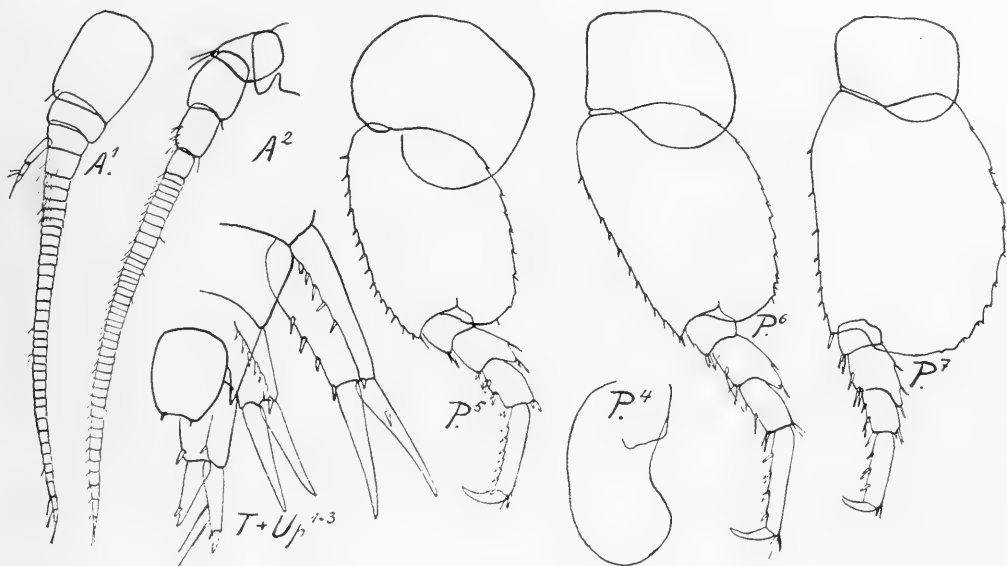


Fig. 24. *Pseudalibrotus Nanseni* Nr. 4.

however, has a single long ciliated seta. Telson exactly as in Sars' figure.

St. 118, specimens Nos. 4—5 (Fig. 24), 8 mm. Specimens 4—5 appear to be exactly alike; I have therefore only dissected the one. Sex I was unable to determine. The 3. epimeral plate in the metasome is of the same shape as in Nr. 1 and 3.

Despite the small size of the specimen, the antennae, especially ant. 1, are longer, and joints far more numerous than in Nr. 3; in ant. 1, the flagellum has 35, and the accessory flagellum 3; in ant. 2, the flagellum has 44 joints. In both pairs of antennae the joints of the flagellum are remarkably short. P1 is as in Nr. 3. In p2 the 1. joint is as in Nr. 1, but the arrangement of the setae on the 5. and 6. joints is stronger, about the same as in Nr. 2. P3 as in Nr. 1—3. In p4, the 1. joint (*vide* fig. 24) is of almost the same shape as in Nr. 3, but slightly broader.

P5—p7 resemble those of the previous specimen, but in p7 the 2. joint is comparatively short and broad. For the uropoda (*vide* fig. 24) there are 2 ciliated setae on the outer ramus in urop. 3. Telson of about the same shape as in Nr. 1.

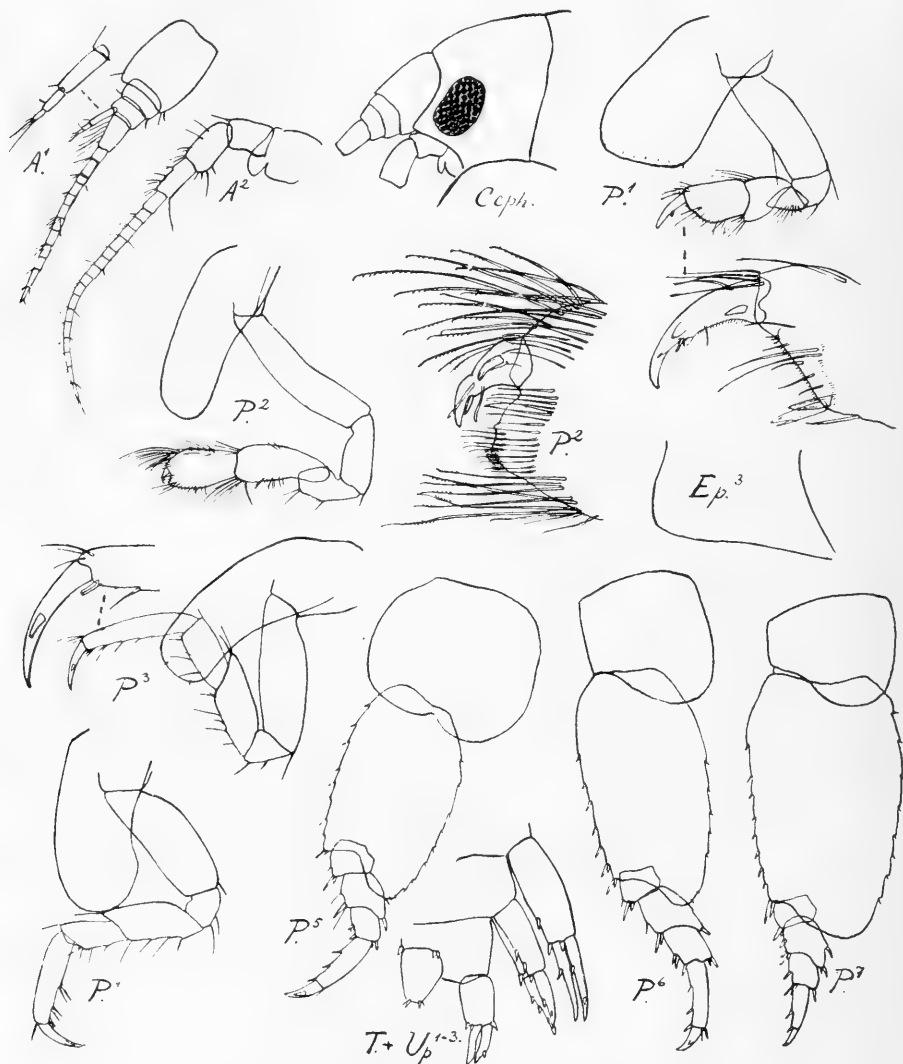


Fig. 25. *Pseudalibrotus Nanseni* from St. 126.

St. 119, 400 m. w., 1 spec., ♂ 13 mm. The eyes have some slight trace of reddish colour remaining. The epimeral plate on the 3. metasome joint is of an intermediate shape between that of Nr. 1 and Nr. 2 from St. 118.

In ant. 1, the flagellum has abt. 45 short joints, with calceoli on

the proximal third part; the accessory flagellum has 4 (?) joints. Ant. 2 is slightly longer than ant. 1 and has about 60 joints in the flagellum with calceoli on the proximal third. P1 as in Nr. 2 from St. 118. P2: 1. joint as in Nr. 1 from St. 118, otherwise as in Nr. 2, St. 118. P3—p4 about the same as St. 118, Nr. 1. P5—p7 about the same as St. 118, Nr. 2, but the distal portion of p7 somewhat longer, more like that in St. 118, Nr. 1. With regard to the uropoda, nothing particular to remark, save that the outer ramus in urop. 3 has four long bristles. Telson about the same as in St. 118, Nr. 1.

St. 126, 800 m. w., 2 spec., ♀, 8 mm. (Fig. 25). At this station also were taken two specimens of a *Pseudalibrotus* species, possibly *P. Nanseni*; they cannot, however, be determined with certainty, as they are not full grown. Both are ♀ as there are small marsupial plates. The lateral corner of the cephalon as in Sars' figure of *P. Nanseni*, but the eyes are dark brown, despite the fact that the specimens have now been preserved for 2½ years in spirits. The posterior corner of 3. epimeral plate in the metasome drawn out a good deal, but the point is wanting.

The antennae are small, and with only few joints. (In ant. 1, the flagellum has 13, the accessory flagellum 3; the flagellum of ant. 2 has 18). In this respect they resemble specimen Nr. 3 from St. 118, but the size answers to that of Nos. 4—5 from St. 118, where the antennae had many joints. The anterior corner of 1. joint in p1 is even more drawn out than in *P. Nanseni* (Sars Pl. 4, fig. 14) and the distal edge more obliquely cut. P2, nothing particular to remark, save that the arrangement of the setae is weaker, and the 6. joint somewhat shorter. The emargination in the posterior edge of 1. joint in p4 is very slight. P5—p7 resemble those in *P. Nanseni*, the 4.—5. joints especially however, are much stronger, and the dactylus short and thick. There are no ciliated setae on urop. 3, this may however, possibly be merely a character of youth.

#### 44. *Onisimus Edwardsii* Kr.

Conspectus p. 121.

Kvanefjord St. 10, 12—14 m., between algae, 1 spec. — Bredefjord St. 48, 1 spec.; St. 62, 10—15 m., about 30 spec.; St. 89, 16—17 m., about 10 spec.; St. 104, 7—20 m., several spec.; St. 123, 5—10 m., 2 spec. — The harbour of Julianehaab, algae, 8—10 m., 4 spec.

#### 45. *Orchomenella minuta* Kr.

Conspectus p. 124.

Bredefjord St. 123, 5—10 m., about 15 spec.

This species, otherwise fairly common, has not hitherto been found S. of Frederikshaab.

46. *Orchomenella pinguis* Boeck?

Conspectus p. 423.

Tunugdliarfik St. 142, 14—18 m., 1 spec. Determination not altogether certain, as the crenelation on the 3. epimeral plate of the metasome is lacking.

The species has hitherto only been recorded from Greenland in N. Strømfjord (K. STEPHENSEN, 1913, p. 66).

47. *Tryphosa nanoides* Lilljb.?

Conspectus p. 125.

Bredefjord St. 32, 35—37 m., 1 spec. Determination not altogether certain, the specimen being somewhat defective.

Hitherto found in Greenland only at Sukkertoppen and Upernivik.

48. *Pontoporeia femorata* Kr.

Conspectus p. 127.

Kvanefjord St. 10, 12—14 m., 1 spec. — Bredefjord St. 62, 10—15 m., 5 spec.; St. 123, 5—10 m., 1 spec.; St. 127, 10—15 m., 3 spec. — Skovfjord St. 136 (the harbour of Narssak), 6 m., about 50 spec.

This species, otherwise common enough, has not hitherto been found S. of Frederikshaab.

49. *Stegocephalus inflatus* Kr.

Conspectus p. 132.

Bredefjord St. 48, 6 spec.; St. 134, 85—140 m., 1 spec.

50. *Amphilocheus manudens* Bate.

Conspectus p. 136.

Bredefjord St. 61, 12,5—13 m., 2 spec.; St. 66, 9—11 m., 1 spec.

Hitherto recorded from W. Greenland at 2 places only.

51. *Metopa groenlandica* H. J. Hansen.= *Stenothoë* (*Proboloides*) *clypeata* Stimpson.

Conspectus p. 139, 426.

Kvanefjord St. 13, 34—40 m., 1 spec.

Hitherto found in W. Greenland at 2 places only.

52. *Metopa longimana* Boeck.

Conspectus p. 140.

Bredefjord St. 61, 12,5—13 m., 1 spec.

Hitherto found in W. Greenland at 2 places only.

53. *Metopa neglecta* H. J. Hansen.

Conspectus p. 140.

Bredefjord St. 61, 12,5—13 m., 1 spec.

Hitherto found in W. Greenland at 2 places only.



54. *Metopa Bruzelii* Goës.

Conspectus p. 141.

Bredefjord St. 61, 12,5—13 m., 1 spec.; St. 66, 9—11 m., 2 spec.

55. *Metopa sinuata* G. O. Sars.

Conspectus p. 142.

Bredefjord St. 79, 30—50 m., 1 ♀ with ova; St. 89, 16—17 m., 1 spec.

This species has hitherto only been recorded from Godthaab in W. Greenland and 2 places in N. Norway.

56. *Metopa carinata* H. J. Hansen.

Conspectus p. 142.

Bredefjord St. 61, 12,5—13 m., 2 spec.; St. 66, 9—11 m., 9 spec.; St. 89, 16—17 m., 7 spec. (and 3 spec. juv.); St. 104, 7—20 m., 6 spec.; St. 123, 5—10 m., 5 spec. (and 3 spec. juv.).

This endemic W. Greenland species, which, according to H. J. HANSEN'S V. Grønland, 1887, is stated as very common in a few fathoms of water, has, strangely enough not been recorded again from W. Greenland since 1887, save for a find made by VANHÖFFEN in Lille Karajakfjord (abt. 71° N.).

57. *Syrrhoë crenulata* Goës.

Conspectus p. 144.

Kvanefjord St. 4, 20,5—34 m., 1 spec.; St. 10, 19,5—54 (?) m., 3 spec. — Bredefjord St. 48, several specimens; St. 61, 12,5—13 m., 1 spec.; St. 66, 9—11 m., 3 spec.; St. 79, 30—50 m., about 10 spec.; St. 89, 16—17 m., 2 spec.; St. 104, 7—20 m., 2 spec.; St. 123, 5—10 m., 1 spec. — Tunugdliarfik St. 142, 14—18 m., 9 spec.

This species is thus far more common in the area investigated by the "Rink" than might be expected from what has hitherto been known as to its distribution.

58. *Paroediceros lynceus* M. Sars.

Conspectus p. 148, 426.

Kvanefjord St. 10, between algae, 12—14 m., 1 spec. — Bredefjord St. 48, 2 spec.; St. 61, 12,5—13 m., about 15 spec.; St. 104, 7—20 m., about 15 spec.; St. 123, 5—10 m., several, most of the specimens very small. — Tunugdliarfik St. 142, 14—18 m., about 15 spec.

59. *Monoculodes latimanus* Goës.

Conspectus p. 152.

Bredefjord St. 48, several specimens; St. 61, 12,5—13 m., 1 spec.; St. 62, 10—15 m., 7 spec.; St. 79, 30—50 m., 2 spec.; St. 89, 16—17

m., 9 spec.; St. 104, 7—20 m., 11 spec.; St. 123, 5—10 m., several spec.; St. 127, 10—15 m., 2 spec. — Tunugdliarfik St. 142, 14—18 m., several spec.

60. **Monoculodes borealis** Boeck.

Conspectus p. 153.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 48, 7 spec.; St. 89, 16—17 m., 8 spec.; St. 104, 7—20 m., 5 spec.; St. 123, 5—10 m., 6 spec.; St. 127, 10—15 m., 5 spec. — Tunugdliarfik St. 142, 14—18 m., several spec.

This species has not hitherto been found S. of Godthaab.

61. **Pleustes panoplus** Kr.

Conspectus p. 158.

Kvanefjord St. 9, 22—24 m., 1 spec. — Bredefjord St. 66, 9—11 m., 3 spec. (2 of them very small).

62. **Paramphithoë Boeckii** H. J. Hansen.

Conspectus p. 160.

Skovfjord St. 156, 70—140 m., 3 spec.

This species, doubtless endemic for W. Greenland, is hitherto known only from four places between Godthaab and Egedesminde.

63. **Paramphithoë bieuspis** Kr.

Conspectus p. 161.

Bredefjord St. 32, 35—37 m., 6 spec.; St. 37, 20—30 m., about 20 spec.; St. 48, about 10 spec.; St. 61, 12,5—13 m., 12 ccm.; St. 62, 10—15 m., about 20 spec.; St. 66, 9—11 m., about 50—60 ccm.; St. 79, 30—50 m., 7 spec.; St. 89, 16—17 m., 20 ccm.; St. 107, 7—20 m., about 35 ccm.; St. 123, 5—10 m., about 13 ccm. — Tunugdliarfik St. 142, 14—18 m., about 7 ccm. — Skovfjord St. 145, 10—15 m., 3 spec.; St. 156, 70—140 m., 1 spec.

This species is thus extremely frequent in shallow water, the only exception being the specimen from St. 156, which, by the way, differs somewhat from the rest, the tooth on the 1. joint of the metasome being almost entirely wanting. The specimens fall into two sizes; abt. 5 and abt. 10 mm. so that we may probably suppose the former to be young, the latter year-old individuals. The smaller are the more numerous; large ones were found only at St. 32, 37 (large and small), St. 48, 66 (some few large) and St. 79 (3 large), all the others were small.

The species is so numerous as to make up, together with *Pontogeneia inermis*, the main portion of the Amphipoda found in shallow water.

64. *Paramphithoë assimilis* G. O. Sars.

Conspectus p. 162.

Kvanefjord St. 13, 34—40 m., 1 spec. — Bredefjord St. 32, 35—37 m., 1 spec.; St. 36, 29—100 m., 2 spec.

Hitherto found in Greenland only at Godthaab and Egedesminde.

65. *Parapleustes glaber* Boeck.

Conspectus p. 164.

Bredefjord St. 32, 35—37 m., 1 spec.

66. *Acanthonotosoma serratum* O. Fabr.

Conspectus p. 167.

Bredefjord St. 32, 35—37 m., 2 spec.; St. 36, 29—100 m., 2 spec.; St. 37, 20—30 m., about 10 spec.; St. 48, about 60 spec.; St. 61, 12,5—13 m., about 10 spec.; St. 66, 9—11 m., about 15 spec.; St. 78, 30—50 m., 1 spec.; St. 79, 30—50 m., about 10 spec.; St. 89, 16—17 m., 9 spec. — Skovfjord St. 145, 10—35 m., 1 spec.

67. *Odius carinatus* Sp. Bate.

Conspectus p. 170.

Bredefjord St. 61, 12,5—13 m., 1 spec.; St. 89, 16—17 m., 1 spec.  
Hitherto known only from 3 (4) places in W. Greenland.

68. *Pontogeneia inermis* Kr.

Conspectus p. 173.

Kvanefjord St. 13, 34—40 m., 5 spec. — Bredefjord St. 37, 20—30 m., 3 spec.; St. 48, 2 spec.; St. 61, 12,5—13 m., 20 ccm.; St. 62, 10—15 m., 3 spec.; St. 66, 9—11 m., 60 ccm.; St. 89, 16—17 m., 125 ccm.; St. 104, 7—20 m., 200 ccm.; St. 123, 5—10 m., 50 ccm.; St. 126, 800 m. w., 1 spec. — Tunugdliarfik St. 142, 14—18 m., 5 ccm.

This species, which, together with *Paramphithoë bicuspis* (Nr. 63) is altogether dominant among the Amphipoda found in shallow water, was found in two sizes, abt. 5 and abt. 10 mm., so that the same may possibly apply to both species. The specimens from St. 13 and 48 were large, and some large ones were also found at St. 37, 61, 66 and 89; all the others were small.

69. *Apherusa glacialis* H. J. Hansen.

Conspectus p. 175.

Kvanefjord St. 28, 400 m. w., 1 spec. — Bredefjord St. 30, Nansen-net, 550—450 m., 2 spec.; St. 31, 700 m. w., 1 spec.; St. 64, 600 m. w., 1 spec.; St. 126, 800 m. w., 1 spec.

The find made with the Nansen-net (St. 30) is interesting, this being, as far as I know, by far the greatest depth at which this species has been taken; otherwise, it always keeps close to the surface.

70. *Amphithopsis megalops* Buchh.

Conspectus p. 176.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 48, 4 spec.; St. 61, 12,5—13 m., 12 spec.; St. 62, 10—15 m., 6 spec.; St. 66, 9—11 m., 4 spec.; St. 89, 16—17 m., several spec.; St. 104, 7—20 m., several spec.; St. 123, 5—10 m., several spec.; St. 127, 10—15 m., 2 spec. — Tunugdliarfik St. 142, 14—18 m., about 10 spec. — Skovfjord St. 145, 10—35 m., 2 spec.

Not previously found S. of Godthaab.

71. *Halirages fulvocinctus* M. Sars.

Conspectus p. 178, 426.

Bredefjord St. 46, 20—30 m., 2 spec.; St. 79, 30—50 m., 1 spec.; St. 87, 230 m., 1 spec.; St. 89, 16—17 m., 1 spec. — Skovfjord St. 155, 220 (240)—400 m., 1 spec.

The depth at St. 87 and 155 was remarkably great, as the species is generally found in Greenland waters at up to 30 metres; it has however previously been recorded from Jacobshavn in 350 fathoms.

× × 72. *Halirages bispinosus* n. sp. (Fig. 26).

Bredefjord St. 89, 16—17 m., 2 spec., 8—9 mm.; St. 123, 5—10 m., 3 spec., 8—9 mm.

All these specimens appear to be ♂, they are, however, very defective, so that it was necessary to dissect two specimens for the figure here given.

The species so closely resembles *H. fulvocinctus* that I at first supposed the specimens in question to be young individuals of that species, the tooth on the 7. joint of the mesosome being there very small; on closer examination, however they were found to differ in several good characters. On the whole, the resemblance is so great that I here restrict myself to mentioning the points of difference.

There is no tooth on the 7. joint of the mesosome, there are, however, teeth on the 1. and 2. joints of the metasome. The 3. epimeral plate is of the same shape as in *H. fulvocinctus*, but the posterior edge has only about 5 small teeth (in *H. fulvoc.* 10 or more). There is no emargination in the posterior edge of the telson; dentition is, however, present, consisting of one large tooth in the centre, then one very small on either side, then a larger, followed by a fairly deep notch with a bristle, with a large tooth outermost at either corner. Both pairs of antennae have calceoli, so that the specimens are doubtless grown ♂♂, and the ant. are of the same length as in *H. fulvoc.* P1—p2 are of the same shape as in *H. fulvoc.* save that the 1. joint of p1 is more rounded at its anterior point, and the 1. joint of p2 narrower out towards the end; the same applies to 1. joint of p3. P5—p7 are of increasing length,

p7 being longest; but as p7 is here drawn from a specimen slightly smaller than that from which p5—p6 were taken, it appears smaller in the figure than is actually the case. Up. 1—3 are of about the same shape

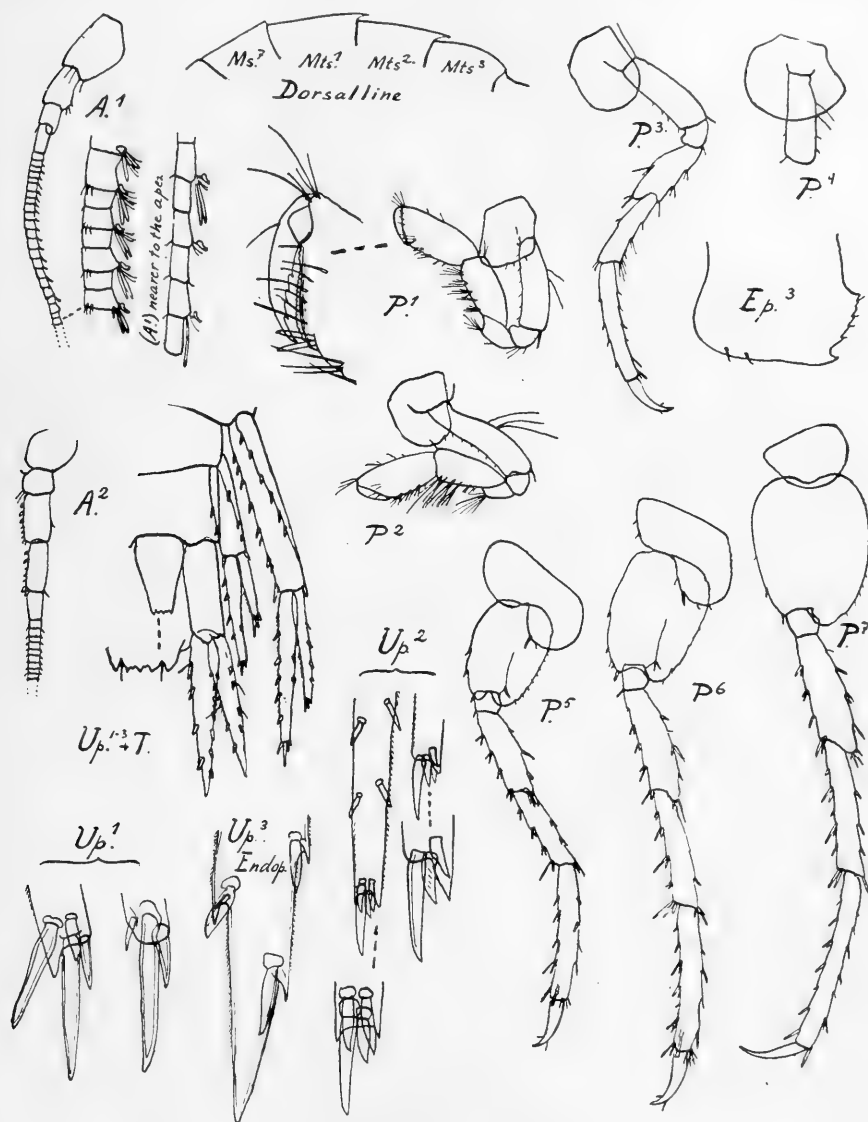


Fig. 26. *Halirages bispinosus*.

as in *H. fulvoc.* but up. 3 has much fewer teeth along the edge, and only a few long bristles.

Despite the great resemblance to *H. fulvoc.* therefore, the present species is easily distinguished by the following characters: Tooth wanting on 7. joint of the mesosome, posterior edge of telson, and up. 3.

In order to make sure that I had not after all here to deal with small specimens of *Hal. fulv.* I examined several specimens of that species at about the same size; these were certainly somewhat different from the grown specimens, there being for instance at times small teeth in the emargination of the telson, while the tooth on the 7. joint of the mesosome can be somewhat small; in spite of this, however, the two forms were easily distinguishable; there were no real intermediate forms.

The specific name of *bispinosus* refers to the fact of there being only 2 teeth in the dorsal line.

73. *Calliopius laeviusculus* Kr.

Conspectus p. 179, 426.

Bredefjord St. 66, 9—11 m., 7 spec. (?); St. 89, 16—17 m., 6 spec. (?); St. 104, 7—20 m., 8 spec. (?); St. 123, 5—10 m., 1 spec.

The specimen from St. 123 is determined with certainty; it measured 11 mm., the others only about 8 mm. And with regard to the others, I am not certain as to the correctness of the determination, as they closely resemble *C. Rathkei*, a point which HOLMES remarked some years back in the case of the smaller specimens (Bull. Bur. Fisheries, Washington, vol. 24, 1904, p. 494). The terminal lappet of the last peduncular joint of the ant. 1. is too short, and the hook on the 3. epimeral plate of the metasome is of an intermediate shape between those of the two species.

74. *Calliopius Rathkei* Zaddach.

Conspectus p. 180, 426.

Kvanefjord St. 21. surface, 1 spec. (?). — Bredefjord St. 61, 12,5—13 m., 1 spec.; St. 85, surface, 1 spec.

The specimens from St. 61 and 85 are doubtless correctly determined; there is some uncertainty, however, in the case of that from St. 21, which, with the longer lappet on ant. 1, resembles *C. laeviusculus*; the hook on the 3. epimeral plate of the metasome, however, agrees with Sars' figure (Account, Pl. 157, fig. 2). This species has, by the way, only been found in W. Greenland near Disko.

75. *Rhachotropis aculeata* Lepechin.

Conspectus p. 183, 427.

Kvanefjord St. 6, 45 m., 1 spec. — Bredefjord St. 79, 30—50 m., 6 spec.; St. 109, 125—140 m., 1 spec. — Skovfjord St. 156, 70—140 m., ♀ with ova.

Strangely enough, this species is not hitherto known from between Julianehaab (abt.  $60\frac{3}{4}^{\circ}$  N.) and abt.  $66\frac{1}{2}^{\circ}$  N.

76. *Rhachotropis inflata* G. O. Sars.

Conspectus p. 184.

Bredefjord St. 48, 2 spec.; St. 79, 30—50 m., 1 spec.

Hitherto found in W. Greenland only in Nivak Fjord (abt.  $68\frac{1}{2}^{\circ}$  N.).77. *Gammarus locusta* L.

Conspectus p. 192.

Kvanefjord St. 10, 19,5—54(?) m., 1 spec. — Bredefjord St. 29, taken at the surface, 1 spec. — Bredefjord Sermilik, Tasiusak, under stones at the shore, several specimens.

It is remarkable that this extremely common and widely distributed species is not found in very great numbers in the "Rink" material.

× 78. *Gammarus Zaddachi* Sexton.

*Gammarus Zaddachi* Sexton, Proc. Zool. Soc., London 1912, p. 657, Pl. 72, Pl. 73, fig. 1—12.

— — Sexton, Schriften Physik.-ökonom. Gesellschaft., Königsberg i. Pr., vol. 54, 1913, Heft 1, p. 90, Pl. 4, fig. 2.

In the stream at Narssak, Skovfjord, 6—VIII, 1912, 1 spec.

The specimen is small (abt. 7 mm.), and not a little defective. There are no setae in "clusters" on the antennae, which is perhaps due to the youth of the individual, but up. 3 and especially the 1. joint of p4 are in excellent accordance with SEXTON's figure; there are however, only 2 (not 3) teeth on the posterior portion of 1. joint in p4.

The species is new for Greenland, it is known however, from North Germany (Königsberg to the Elbe) and from Irish lakes; it is found in salt, fresh and brackish water.

79. *Amathilla pinguis* Kr.

Conspectus p. 199.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 37, 20—30 m., 1 spec.; St. 61, 12,5—13 m., about 15 spec.; St. 62, 10—15 m., 2 spec.; St. 66, 9—11 m., 5 spec.; St. 89, 16—17 m., 13 spec.; St. 123, 5—10 m., 8 spec.

80. *Ampelisca Eschrichtii* Kr.

Conspectus p. 201.

Kvanefjord St. 6, 45 m., 5 spec. — Bredefjord St. 127, 10—15 m., 1 spec. — Skovfjord St. 156, 70—140 m., 1 spec.

Not hitherto known S. of Godthaab.

81. *Ampelisca macrocephala* Lilljb.

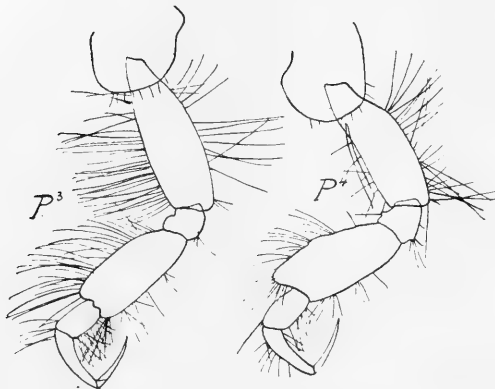
Conspectus p. 202, 427.

Bredefjord St. 127, 10—15 m., 6 spec.

This species, not common in Greenland, is not previously known S. of Godthaab.

82. *Haploops tubicola* Lilljb.

Conspectus p. 203.

Fig. 27. *Protomedeia fasciata* ♀.

Bredefjord St. 127, 10—15 m., 1 tube and 1 spec. — Skovfjord St. 143, 65—90 m., 1 spec.

Not known hitherto S. of abt. 65° N.

83. *Protomedeia fasciata* Kr.

(Fig. 27).

Conspectus p. 206.

Bredefjord St. 48, 1 spec.; St. 62, 10—15 m., 1 spec.; St. 127, 10—15 m., 11 ♀♀ (with ova), 1 ♂.

4. joint in p3—p4 considerably heavier than usual; I have therefore drawn it.

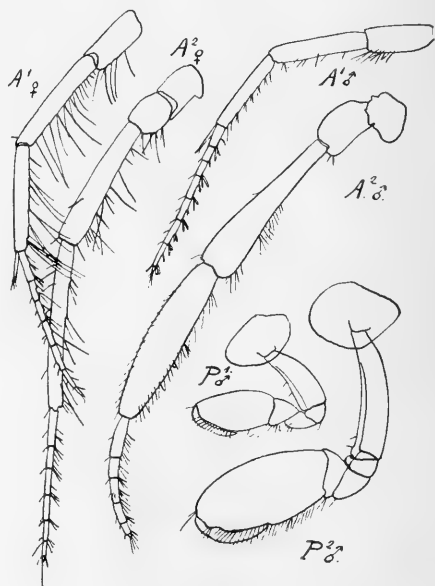
84. *Ischyrocœrus anguipes* Kr. (Fig. 28).

Conspectus p. 209.

Kvanefjord St. 13, 34—40 m., several spec. — Bredefjord St. 32, 35—37 m., about 10 spec.; St. 36, 29—100 m., about 10 spec.; St. 37, 20—30 m., several spec.; St. 46, 20—30 m., 1 spec.; St. 48, several spec.; St. 61, 12.5—13 m., several spec.; St. 62, 10—15 m., a few spec.; St. 66, 9—11 m., several spec.; St. 79, 30—50 m., 2 spec.; St. 89, 16—17 m., several spec.; St. 104, 7—20 m., a few spec.; St. 123, 5—10 m., a few spec. — Tunugdliarfik St. 141, 35—70 m., 1 spec.; St. 142, 14—18 m., 2 spec.

By far the greater number are ♀♀ with ova, but there are also a number of ♂♂. Only a very few answer entirely to Sars' figure (Account, Pl. 210) the ant., especially in the ♂ being in most cases too slender, and in most of the ♂ p2 has even the same shape as in the ♀; only from St. 36 and 48 have we a few entirely normal ♂♂.

By way of indicating a form of which many specimens were

Fig. 28. *Ischyrocœrus anguipes* ♂ (juv.?) and ♀.



found I have drawn some appendages of specimens from St. 32; in the ♀, the joints of the flagellum are very thin, and in the (young?) ♂, the 3. joint in the peduncle of ant. 2, and the 1. joint of the flagellum are of a peculiar and entirely divergent shape, while p2 is of exactly the same shape as in the ♀.

85. *Neohela monstrosa* Boeck.

Conspectus p. 216.

Bredefjord St. 96, 410 m., 2 spec.; St. 98, 520—560 m., 1 spec.  
Not hitherto found south of Umanak-Fjord (abt. 71° N.).

86. *Dulichia spinosissima* Kr.

Conspectus p. 217.

Bredefjord St. 32, 35—37 m., about 10 spec.; St. 36, 29—100 m., 2 spec.; St. 37, 20—30 m., 2 spec.; St. 48, about 50 spec.; St. 53, 260 m., 1 spec.; St. 61, 12,5—13 m., about 10 spec.; St. 66, 9—11 m., 8 spec.; St. 79, 30—50 m., 5 spec. — Skovfjord St. 145, 10—35 m., 1 spec.

This species is thus very common in Bredefjord down to abt. 50 m., and has even been found at 260 m. Strangely enough, it has hitherto only been recorded from 5 (6) places in W. Greenland.

87. *Dulichia tuberculata* Boeck.

Conspectus p. 218.

Bredefjord St. 66, 9—11 m., 2 ♀♀, 3 ♂♂; St. 89, 16—17 m., 1 ♀ with ova.

There can be no doubt as to the correctness of the determination, despite the fact that the ♂ are quite young, so that p2 is of the same shape as in the ♀.

The species has not hitherto been taken S. of Sukkertoppen (abt. 65½° N.).

88. *Aeginella spinosa* Boeck.

Conspectus p. 222.

Kvanefjord St. 3, 210—225 m., 1 spec.

Hitherto found only at two places in W. Greenland (abt. 65½° N.—abt. 68° N.) and was thus not known at all from the area investigated by the "Rink".

89. *Caprella septentrionalis* Kr.

Conspectus p. 223.

Kvanefjord St. 10, 19,5—54 (?) m., 1 spec.; St. 13, 34—40 m., 1 spec. — Bredefjord St. 32, 35—37 m., 5 spec.; St. 61, 12,5—13 m., several spec.; St. 62, 10—15 m., several spec.; St. 66, 9—11 m., several spec.; St. 89, 16—17 m., several spec.; St. 93, 10 m., 1 spec.; St. 104, 7—20 m., several spec.; St. 123, 5—10 m., several spec. — Tunugdliarfik St. 142, 14—18 m., 1 spec. — The harbour of Julianehaab, among algae, 8—10 m., several spec.

× × 90. *Caprella Rinkii* n. sp. (Fig. 29).

Brødefjord St. 34, 460—550 m., 1 ♀ (adult?), 13 mm.; St. 121, 700 m., 1 ♀ (not adult), 12 mm.

Since P. MAYER's Caprellidae in the Siboga-Expd., the following new species have been described:

*C. hirsuta* var. n. *longimana* Chevreux, Bull. Inst. Océanogr., Monaco, Nr. 262, 1913, p. 5, figs.

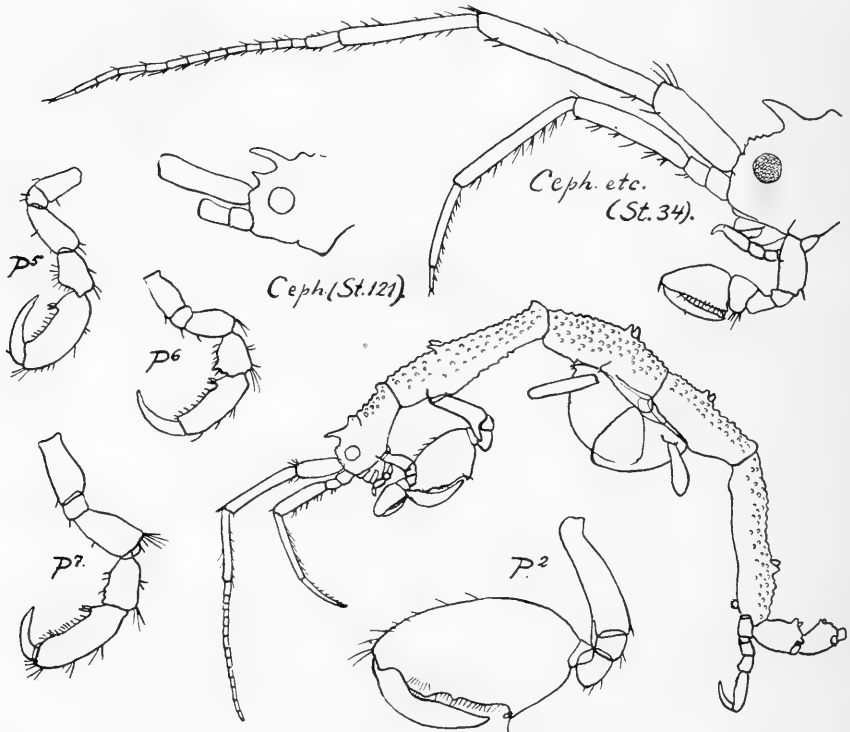


Fig. 29. *Caprella Rinkii* (St. 34; the little cephalon and p6—p7 are from St. 121).

*C. bermudia* Kunkel, New Haven Transact. Connecticut Acad., vol. 16, 1910, p. 108, figs.

*C. tridous* Stebbing, Cape Town, Ann. South Afric. Mus., vol. 6, 1910, p. 467, Pl. 48, fig. B.

*C. alaskensis* Holmes, Amphip.; Harriman Alaska-Exp., pt. 10, 1904, p. 241, fig. 125.

*C. scabra* Holmes l. c. p. 243, fig. 126.

*C. kincaidi* Holmes l. c. p. 245, figs. 127—128.

As, however, I was not able to obtain all the works in question, and my species did not agree with any of the descriptions I had access to, I requested Prof., Dr. PAUL MAYER, of Jena, to determine whether the species should not be regarded as new. I sent him the one speci-

men (from St. 121), and received the following reply: "Sie ist offenbar neu; leider freilich nur ein ♀ juv.; also kann man gar nicht wissen, wie die alten ♂ aussehen mögen". I take this opportunity of expressing my best thanks to Prof. P. MAYER for his courtesy in the matter.

I have drawn the grown ♀, but as p6—p7 are lacking in this specimen, these are here taken from the immature specimen from St. 121.

In point of habit, the present species resembles *C. septentrionalis*, as regards its strong build, but is immediately distinguished from this by its spines and warts. The whole of the body, with the exception of the two posterior segments of the mesosome, is warty down the back, the 2. segment being also slightly warty on the ventral side. Above and between the eyes there is a strong spine pointing forward; in front of this there are, in the grown ♀, a few small warts, and in the young ♀ a slightly smaller spine. The dorsal warts are setose. At the posterior end of the cephalon, 1., 2. and 4. mesosome segments, there is a large protuberance, and about the middle of the 2.—7. segments of the mesosome two thick spines set as a pair. The eyes are round and colourless. The antennae are of the same length and shape as in the ♀ of *C. septentr.* but the 3. joint in the peduncle of ant. 1. is slightly longer. P1—p2 nothing particular to remark. The gills are sausage-shaped, and there are no spines at their base. P5—p7 of about the same shape as in *C. septentr.*, but the 2. joint does not project so much behind.

No other Caprellid has been taken in Greenland at so great a depth; the nearest is *Aeginella spinosa*, which was taken at 210—225 m. ("Rink") and also at 167 fathoms.

At the both stations a number of Hydroidae were taken; there is thus but little doubt that the animals must have lived on these.

### Isopoda.

#### 91. *Calathura brachiata* Stimps.

Conspectus p. 229.

Brødefjord St. 55, 310—330 m., 1 spec.

The specimen in question lacks the depressions in the back. The species has not previously been taken S. of abt.  $66\frac{1}{2}^{\circ}$  N.

#### 92. *Gnathia* sp.

Brødefjord St. 45, 430—450 m. an old Praniza.

Three species of *Gnathia* in all are known from Greenland (*vide* Conspectus p. 230—31), *viz.*: *G. elongata*, *G. cristata*, and *G. robusta*; the Praniza stage of *G. cristata* however, is not known. The present specimen closely resembles that shown by Sars in Norske Nordhavs Exped., Pl. 8, fig. 27: a Praniza of *G. robusta*; I am not certain, however, that it really is this species.

I have recently given a full list of the literature and all species of Gnathiidae, in Isopoda, Tanaidacea, Cumac. Amphip. excl. Hyperidea; Report on the Danish Oceanographical Exped. 1908—10 to the Mediterranean and adjacent seas, vol. 2, Biol. D. 1, 1915, p. 5—9.

93. *Aega ventrosa* M. Sars.

Conspectus p. 233.

Bredefjord St. 97, 250—280 m., 1 spec.

Formerly known from two places only in W. Greenland. Both in the Danmark exped. and in the Conspectus, this species is incorrectly recorded from Spitzbergen and the Kara Sea, where as a matter of fact it has never been found.

94. *Ianira maculosa* Leach.

Conspectus p. 240.

Bredefjord St. 55, 310—330 m., 1 spec.

Formerly known only from two places in W. Greenland (abt.  $66\frac{1}{2}^{\circ}$  N. and abt.  $72\frac{1}{2}^{\circ}$  N.).

95. *Ianira tricornis* Kr. (= *Ianthe libbeyi* Ortmann).

Conspectus p. 241, 243, 427.

Bredefjord St. 75, 200—270 m., 1 spec. — Skovfjord St. 145, 10—35 m., 2 spec.; St. 152, 80—120 m., 1 spec.

I am indebted to Dr. H. J. HANSEN for pointing out that *I. libbeyi* is synonymous with *I. tricornis*; further particulars as to this point will appear in his work on the Isopoda from the "Ingolf" Exped. shortly to be published.

96. *Munna minuta* H. J. Hansen.

Conspectus p. 245.

Bredefjord St. 61, 12.5—13 m., 1 spec.; St. 66, 9—11 m., 2 spec.; St. 89, 16—17 m., 2 spec.

× 97. *Eurycope producta* G. O. Sars.

*Eurycope producta* G. O. Sars, Beretn. om en i Sommeren 1865 foretagen zool. Reise ved Kysterne af Christianias og Christiansands Stifter. Nyt Mag. for Naturvid., Christiania 1866, p. 32.

— — G. O. Sars, Account of the Crust. of Norway, vol. 2, Isop., 1899, p. 146, Pl. 65.

Bredefjord St. 55, 310 m., 2 spec.

These specimens were brought up in the water bottle, and as this was always suspended abt. 1 m. above the bottom, we have here a proof of the manner in which the species keeps to the sea floor.

The species is new for Greenland.

Further distribution: "Not rare in several localities of the Norwegian coast, from the Christiania Fjord to Vadsø, in depths varying from 60 to 400 fathoms. Out of Norway it has not yet been recorded." (SARS, l. c., 1899). It is thus one of the not inconsiderable number of species which have hitherto been found only in Greenland and Norwegian waters, possibly because the interjacent area has not yet been sufficiently investigated.

98. **Phryxus abdominalis** Kr.

Conspectus p. 250.

Kvanefjord St. 11, 290—320 m., 1 spec. on *Spirontocaris polaris*.

Bredefjord St. 48, 3 spec., on *Sp. turgida* and *Lilljeborgii*; St. 61, 12,5—13 m., 2 larvae; St. 66, 9—11 m., 3 larvae; St. 89, 16—17 m., 1 larva on young stage of *Spiront. groenlandica*.

The species has, as far I know, not hitherto been found on *Spiront. groenlandica*.

99. **Bopyroides Hippolytes** Kr.

Conspectus p. 251.

Bredefjord St. 48, about 12 spec., on *Spirontocaris polaris* and *Lilljeborgii*; St. 66, 9—11 m., 7 spec., on *Sp. polaris* (one with 2 parasites); St. 89, 16—17 m., 1 spec., on *Sp. polaris*; St. 104, 7—20 m., 1 spec., on *Sp. polaris*.

This species has, as far as I know, not hitherto been found on *Sp. Lilljeborgii*; in the "Tjalfe" exped. a specimen of *Sp. spinus* bearing this parasite was incorrectly determined as *Sp. macilenta*.

100. **Dajus Mysidis** Kr.

Conspectus p. 253.

Bredefjord St. 48, 2 spec.; St. 61, 12,5—13 m., 3 spec. and 3 larvae; St. 66, 9—11 m., 2 spec.; St. 89, 16—17 m., 3 spec.; St. 104, 7—20 m., 1 spec.; St. 123, 5—10 m., 1 spec. and 2 larvae.

This species, otherwise very widely distributed, has, strangely enough, not hitherto been recorded from W. Greenland S. of Claushavn (abt. 69° N.) i. e. over 400 miles north of the present localities.

**Leptostraca.**

101. **Nebalia bipes** Fabr.

Conspectus p. 282.

Kvanefjord St. 10, 19,5—54 (?) m., 4 spec. — Bredefjord St. 62, 10—15 m., 5 spec.; St. 93, 10 m., 2 spec.; St. 123, 5—10 m., 2 spec. — Skovfjord St. 136 (the harbour of Narssak), 6 m., 1 spec. — The harbour of Julianehaab (about the middle of the harbour), 8—10 m., on green filiform algae, more than 550 spec.

Strangely enough, this species is hitherto known from only 4 places in W. Greenland, the southernmost locality being abt. 67° N.; there is, however, in the Zool. Museum, a large amount of material from Greenland which has not yet been dealt with. The species keeps for the most part to somewhat sheltered, shallow bays, with rotten weed; note in particular the large numbers from Julianehaab harbour, where they were found adhering to weed drawn up with the anchor.

## ENTOMOSTRACA.

### Phyllopoda.

× 102. *Podon Leuckartii* G. O. Sars.

*Podon Leuckartii* Lilljeborg, Cladocera Sueciae; Nova acta Reg. soc. scient. Upsal., ser. 3, vol. 19, 1901, p. 636 (*ubi lit. et syn.*), Pl. 85, fig. 12, Pl. 86, fig. 1—3.

— — C. Apstein, Cladocera; Nordisches Plankton, Zool., vol. 4, Entomostr. VII, 1901, p. 13, fig. 24, Nachtrag p. 19, fig. 30.

Bredefjord St. 101, surface-plankton, 1 spec.

This species is new for Greenland; marine Cladocera have as a matter of fact, never before been found there at all.

Further distribution: "Aus dem nördlichen Eismeere kenne ich sie nicht . . . Westeurop. Küsten u. Mittelmeeere" (LILLJEBORG l. c.), "Ostsee bis Finnischer Meerbusen (Juni—Oktbr. sehr häufig. STEENROOS), Skagerak, Westküste Norwegens, Nordsee, bei Helgoland im Juni häufig" (APSTEIN l. c.).

The following fresh water Cladocera and Copepoda were taken in four different small lakes, which for the sake of convenience may here be numbered 1—4, viz.:

Lake Nr. 1. A small lake in the innermost portion of Tasiusak, Bredefjord Sermilik.

Lake Nr. 2. A small lake a little distance inland from St. 123.

Lake Nr. 3. Some small pools above the old Norse ruin at Akuliaritsok, Bredefjord; the water was 0,1 m. deep.

Lake Nr. 4. A small pool above Narssak, Skovfjord; the water 0,1 m. deep.

103. *Latona glacialis* W.-L.

Conspectus p. 286.

Lake Nr. 1 (9/VII), several spec., some of them with ova; Lake Nr. 2 (26/VII), surface, several spec., some of them with ova; Lake Nr. 3 (28/VII), several spec., partly with ova; Lake Nr. 4 (1/IX), a few, partly with ova.

This species, which is endemic for Greenland, has hitherto only been found at Frederikshaab and Godthaab.

104. *Daphnia pulex* de Geer.

Conspectus p. 288.

Lake Nr. 1 (9/viii), several spec.; (?) Lake Nr. 2 (26/viii), surface, a few. Found in all quarters of the globe except Australia.

105. *Ceriodaphnia quadrangula* O. Fr. Müller.

Conspectus p. 290.

Lake Nr. 1 (9/viii), 1 spec.; Lake Nr. 2 (26/viii), surface, a few; Lake Nr. 3 (28/viii), some spec.

In addition to the very wide distribution stated in the Conspectus, the species has also been found at Akmolinsk (Central Asia) and Altai (G. O. Sars, Ann. Mus. Acad., St. Petersburg, vol. 8, 1903, p. 21).

106. *Scapholeberis mucronata* O. Fr. Müller.

Conspectus p. 291.

Lake Nr. 1 (9/viii), some spec., a few with ova; Lake Nr. 3 (28/viii), some spec.; Lake Nr. 4 (1/ix), several spec.

In the addition to the wide distribution mentioned in the Conspectus, this species has also been recorded from Akmolinsk (Central Asia), Mongolia and Altai (G. O. Sars, Ann. Mus. Zool. Imp., St. Petersburg, vol. 8, 1903, p. 20, and DADAY, Math. Naturwiss. Berichte aus Ungarn, vol. 26, 1908 (1913), p. 324).

107. *Bosmina obtusirostris* G. O. Sars.

Conspectus p. 292.

Lake Nr. 1 (9/viii), several spec., partly with ova; Lake Nr. 3 (28/viii), several spec., but no with ova.

In addition to all the places mentioned in the Conspectus, this species has also been found at Dshujlju Köl (Altai) (G. O. Sars, Ann. Mus. Zool. Acad. Imp., St. Petersburg, vol. 8, 1903, p. 24) and Mongolia (DADAY, Math. Naturwiss. Berichte aus Ungarn, vol. 26, 1908 (1913), p. 322).

108. *Acroperus leucocephalus* Schödler.

Conspectus p. 294.

Lake Nr. 2 (26/viii), several spec., partly with ova, and some ehippia; Lake Nr. 4 (1/ix), 4 spec.

In addition to the localities mentioned in the Conspectus, this species has also been found at Akmolinsk (Central Asia) (G. O. Sars, Ann. Mus. Zool. Acad. Imp., St. Petersburg, vol. 8, 1903, p. 26) and Mongolia (DADAY, Math. Naturwiss. Berichte aus Ungarn, vol. 20, 1908 (1913), p. 320).

109. *Lynceus affinis* Leydig.

Conspectus p. 295.

Lake Nr. 1 (9/viii), ♂ and ♀ (partly with ova); Lake Nr. 2 (26/viii), several spec., partly with ova.

In addition to the localities mentioned in the Conspectus, the species has also been found at Akmolinsk (Central Asia) and Altai (G. O. Sars, Ann. Mus. Zool. Acad. Imp., St. Petersburg, vol. 8, 1903, p. 27) and Mongolia (Daday, Math. Naturwiss. Berichte aus Ungarn, vol. 26, 1908 (1913), p. 318).

110. *Chydorus sphaericus* O. Fr. Müller.

Conspectus p. 297.

Lake Nr. 1 (9/viii), several spec., partly with ova; Lake Nr. 2 (26/viii), some spec., most of them with ova; Lake Nr. 3 (28/viii), several spec., partly with ova; Lake Nr. 4 (1/ix), several spec., partly with ova.

111. *Euryceerus lamellatus* O. Fr. Müller.

Conspectus p. 298.

Lake Nr. 1 (9/viii), several spec., a few with ova; Lake Nr. 2 (26/viii), several spec.; Lake Nr. 3 (28/viii), several spec., several with ova; Lake Nr. 4 (1/ix), several spec., partly with ova.

In addition to the places mentioned in the Conspectus this species has also been found at Akmolinsk (Central Asia) and Altai (G. O. Sars, Ann. Mus. Zool. Acad. Imp., St. Petersburg, vol. 8, 1903, p. 25) and Mongolia (Daday, Math. Naturwiss. Berichte aus Ungarn, vol. 26, 1908 (1913), p. 320).

112. *Polyphemus pediculus* L.

Conspectus p. 299.

*Polyphemus pediculus* L. Keilhack, Zur Biol. d. Pol. pedic.; Zool. Anzeiger, vol. 30, 1906, p. 911.

— — J. Strohl, Die Biol. von Pol. pedic., *ibid.*, vol. 32, 1907, p. 19.

Lake Nr. 1 (9/viii), some spec., a few with ova; Lake Nr. 2 (26/viii), several spec., partly with ova; Lake Nr. 3 (28/viii), a few with ova; Lake Nr. 4 (1/ix), several spec., partly with ova.

**Copepoda.**

The following list of marine pelagic Copepoda is not complete, but includes only character forms. I have not had time to make an exhaustive survey of the subject; it would, moreover, have been premature to attempt such, in view of the fact that Mag. sc. C. Wirth has for the past years been at work upon the Copepoda from the "Ingolf" Exped. I have therefore considered it best to postpone the fuller treatment of my own Co-



pepoda until WIRTH's work is published, in order to avoid giving new descriptions etc., which would doubtless be largely rendered superfluous by the publication of the "Ingolf" material.

113. *Cyclops strenuus* Fischer.

Conspectus p. 302.

Lake Nr. 1, 1 ♀.

In addition to the localities stated in the Conspectus, the species has also been taken in Giesecke Lake near Nordre Strømfjord (K. STEPHENSEN, N. Strømfjord 1913, p. 76).

114. *Cyclops viridis* Jurine.

Conspectus p. 303.

Lake Nr. 2, several specimens.

115. *Diaptomus minutus* Lilljb.

Conspectus p. 304.

*Diaptomus minutus*, K. Stephensen, N. Strømfjord, 1913, p. 76, Pl. 7—8.

Lake Nr. 1, several thousand spec., ♂♂ and ♀♀, but none of them with ova; Lake Nr. 2, several thousand spec., a few with ova; Lake Nr. 3, several thousand spec., a few with ova.

Ant. 1 dext. of the ♂ is shown in my work above quoted as without any expanded portion, such as is found in other *Diaptomus* species; this must be due to shrinkage in the glycerine. On renewed investigation, all the ♂♂ examined were found to have normally expanded antennae.

The species was present in the lakes investigated in such numbers as to colour the water red.

× 116. *Diaptomus castor* Jurine.

Conspectus p. 305.

Lake Nr. 4, 1 ♂.

The determination is absolutely certain, so that this species may now without reserve be ascribed to the fauna of Greenland, *vide* Conspectus.

117. *Calanus hyperboreus* Kr.

Conspectus p. 307.

Kvanefjord St. 27, Nansen-net, 300—250 m., some spec. — Bredefjord St. 30, 150—125 m., some spec.; *ibid.*, 550—450 m., some spec.; St. 58, Nansen-net, 340—290 m., 1 spec.; St. 63, Nansen-net, 450—350 m., some spec.; St. 64, 600 m. w., some spec.; St. 73, 300 m. w., 5 ccm.; St. 94, Nansen-net, 450—350 m., some spec.; *ibid.* 550—450 m., some spec.; St. 100, 500 m. w., about 15 ccm.; St. 108, 300 m. w., 10 ccm.

— Bredefjord Sermilik St. 118, 500 m. w., 5 ccm.; St. 119, 400 m. w., 10 ccm. — Bredefjord St. 126, 800 m. w., 5 ccm.; St. 131, 800 m. w., 1 ccm.; St. 132, 700 m. w., 1 ccm.; St. 133, 600 m. w., 7 ccm.

This species is thus very common, and has been found from 125 m. right down to the greatest depths investigated (550 m. with the Nansen-net; 800 m. w. with the ringtrawl) from temperature of 1° upwards and salinity abt. 33—abt. 35½ ‰.

#### 118. *Calanus finmarchicus* Gunnerus.

Conspectus p. 308.

Kvanefjord St. 26, Nansen-net, 200—150 m., some spec.; St. 27, Nansen-net, 150—125 m., some spec.; *ibid.*, 250—200 m., 2 ccm.; *ibid.*, 300—250 m., 1 ccm. — Bredefjord St. 30, Nansen-net, 100—75 m., some spec.; *ibid.*, 125—100 m., 1 ccm.; *ibid.*, 150—125 m., 3 ccm.; *ibid.* 200—150 m., 15 ccm.; *ibid.* 250—200 m., 1,5 ccm.; *ibid.*, 350—250 m., some spec.; *ibid.*, 450—350 m., some spec.; *ibid.*, 550—450 m., 1 ccm.; St. 31, 700 m. w., 65 ccm.; St. 35, 400 m. w., 50 ccm.; St. 47, 600 m. w., 125 ccm.; St. 50, 100 m. w., 1,5 ccm.; St. 58, Nansen-net, 340—290 m., some spec.; St. 59, 300 m. w., 10 ccm.; St. 60, 500 m. w., 425 ccm.; St. 63, Nansen-net, 100—75 m., about 2 ccm.; *ibid.* 125—100 m., 2 ccm.; *ibid.*, 150—125 m., 3 ccm.; *ibid.* 200—150 m., 2 ccm.; *ibid.*, 250—200 m., 1 ccm.; *ibid.*, 350—250 m., 1 ccm.; *ibid.*, 450—350 m., 2 ccm.; *ibid.* 550—450 m., 3 ccm.; St. 64, 600 m. w., 80 ccm.; St. 65, 500 m. w., 350 ccm.; St. 72, 400 m. w., 800 ccm.; St. 73, 300 m. w., 100 ccm.; St. 84, 200 m. w., 9 ccm.; St. 85, surface, 3 spec.; St. 86, 100 m. w., 4 ccm.; St. 94, Nansen-net, 75—50 m., 0,5 ccm.; *ibid.* 100—75 m., 1 ccm.; *ibid.*, 125—100 m., 1 ccm.; *ibid.* 150—125 m., 2 ccm.; *ibid.* 200—150 m., 0,5 ccm.; *ibid.*, 250—200 m., 0,5 ccm.; *ibid.*, 350—250 m., 0,5 ccm.; *ibid.* 450—350 m., 2 ccm.; *ibid.* 550—450 m., 7 ccm.; St. 100, 500 m. w., 250 ccm.; St. 101, surface, 2 spec.; St. 102, 400 m. w., 300 ccm.; St. 106, 100 m. w., 4 ccm.; St. 108, 300 m. w., 90 ccm. — Bredefjord Sermilik St. 118, 500 m. w., 90 ccm.; St. 119, 400 m. w., 80 ccm. — Bredefjord St. 126, 800 m. w., 190 ccm.; St. 128, 700 m. w., 75 ccm.; St. 129, 800 m. w., 150 ccm.; St. 131, 800 m. w., 190 ccm.; St. 132, 700 m. w., 95 ccm.; St. 133, 600 m. w., 135 ccm. — Skovfjord St. 137, Nansen-net, 200—150 m., 3 ccm.; *ibid.*, 250—200 m., < 10 ccm.; St. 154, Nansen-net, 200—150 m., 1 ccm.; *ibid.*, 270 (bottom)—200 m., 7 ccm.

This is the most numerous Copepod species, amounting in the plankton hauls to from (80) 90 to nearly 100 % of all Copepoda. Some few were taken at the surface, but most at greater depths. The maximum seems to lie at about 200 m. (400 m. w.); at St. 72 for instance, out of a total animal mass of 1 litre, abt. 800 ccm. was made up of this species. It thus appears to prefer a temperature of abt. 2°, and a salinity of 34 % or more.

119. *Pseudocalanus elongatus* Boeck.

Conspectus p. 312.

Bredefjord St. 30, Nansen-net, 350—250 m., some spec.; St. 31, 700 m. w., 0,5 ccm.; St. 65, 500 m. w., 15 ccm.; St. 100, 500 m. w., 15 ccm. — Bredefjord Sermilik St. 118, 500 m. w., 5 ccm.; St. 119, 400 m. w., 10 ccm. — Bredefjord St. 131, 800 m. w., 3,5 ccm.; St. 132, 700 m. w., 1,75 ccm.; St. 133, 600 m. w., 7 ccm.

This list of localities is not complete; most of the small Calanidae, which were found at practically all Plankton stations, doubtless belong to this species. I have not, however, included them here, as they were not determined with certainty. Although widely distributed, the species has previously been found in W. Greenland only in Lille Karajakfjord (VANHÖFFEN 1897) and N. Strømfjord (K. STEPHENSEN, N. Strømfjord 1913).

This species is doubtless far more numerous and widely distributed than the "Rink" material shows; there can be no doubt that enormous quantities must have been lost by passing through the comparatively large mesh of the ringtrawl. Save for *Calanus finmarchicus*, this is certainly the most numerous and frequent Copepod species.

120. *Euchaeta norvegica* Boeck.

Conspectus p. 320.

Bredefjord St. 35, 400 m. w., 2,5 ccm.; St. 131, 800 m. w., 3,5 ccm.; St. 132, 700 m. w., 1,75 ccm.

Previously recorded from Greenland only in Lille Karajakfjord (ca. 71° N.).

121. *Crypsidomus Terebellae* Levinsen.

Conspectus p. 343.

Bredefjord St. 88, 40—70 m., 1 spec. on *Nicolea zostericola* Mgrn. Not hitherto found in W. Greenland S. of Sukkertoppen.

122. *Saccopsis Terebellidis* Levinsen?

Conspectus p. 343.

Bredefjord St. 55, 310—330 m., 3 spec. on *Leucariste arcticus* M. Sars.

All three specimens were found adhering close behind the head of the worm; the determination is not however, altogether certain, as two of the specimens were small and ill preserved, while the third and largest had a constriction near the neck.

The species has never been found anywhere save at Egedesminde (W. Greenland abt. 68¾° N.).

123. **Herpyllobius arcticus** Stp. and Ltk.

Conspectus p. 343.

Bredefjord St. 32, 35—37 m., 1 spec.; St. 48, 2 spec.; St. 61, 12,5—13 m., 1 spec.

This species has hitherto been known from W. Greenland only from Ritenbenk and Umanak.

**Ostracoda.**

Besides the 3 fresh-water species mentioned in the Conspectus p. 352—53, G. Alm has, in Arkiv f. Zoologi, Stockholm, vol. 9, Nr. 5, 1914, mentioned the following species from Greenland:

*Candona rectangulata* Alm (Alm l. c. p. 12.)

*Candona candida* Müller (Müller, Ostrac. Tierreich 1912, p. 135).

*Eucypris affinis hirsuta* Fischer (*E. fuscata affinis* Müller, Ostrac., Tierreich p. 177).

*Cyprinotus incongruens* Ramd. (Müller, Ostrac., Tierreich p. 165).

124. **Cypris virens** Jurine?

Conspectus p. 353.

*Eucypris virens* Müller, Ostrac., Tierreich 1912, p. 170.

Lake Nr. 1, 1 spec., 0,7 mm.

The only specimen found was not dissected, and the determination is thus not certain.

**Ostracod** sp.

Lake Nr. 1, 1 spec.

A setose Ostracod, not dissected, and consequently not determined.

125. **Philomedes brenda** Baird.

Conspectus p. 353.

*Philomedes brenda* Müller, Ostrac., Tierreich 1912, p. 32.

Bredefjord St. 127, 10—15 m., several spec.; St. 128, 700 m. w., 7 spec.

This widely distributed species has hitherto been known from Greenland only in some few localities, and not S. of Holstensborg (abt. 67° N.).

126. **Conchoesia** sp.

Bredefjord St. 63, Nansen-net, 350—250 m., 7 spec.; St. 94, Nansen-net 350—250 m., 1 spec.; ibid. 450—350 m., 3 spec.; ibid. 550—450 m., 1 spec.

**Cirripedia.****× 127. Scalpellum Stroemii M. Sars.**

Scalpellum Stromii M. Sars, Oversigt over de i den norsk-arktiske Region forekomm. Krebsdyr; Forhand. Vid. Selsk. Christiania for 1858, 1859, p. 38.

— — G. O. Sars, Crust., Norske Nordhavs-Exp., vol. 1, B, 1885, p. 241, Pl. 20, fig. 1—2.

— — Hoek, Cirripedia; Challenger Report, Zool., vol. 25, 1883, p. 64, 73.

— — Hj. Broch, Die Plattenentwickl. bei Scalpellum Stromii M. Sars; Kgl. Norske Vid. Selsk. Skr., Trondhjem 1912, Nr. 4.

Bredefjord St. 55, 310—330 m., 2 spec. on Hydroida and Bryozoa.

This species is new for Greenland. Hoek, in Nordisches Plankton, vol. 8, p. 269, gives its distribution as follows: "Tiefsee Art, 72—1570 m. (Kalte Zone); Novaja Zemlja; nördl. westl. u. südl. Küsten von Norwegen; atlant. Küsten von Nord-Amerika". It is doubtless hardly correct to refer it to the frigid zone; true, some of the localities from the Norske Nordhavs Exped. lie within this region, but by far the greater portion of its area of distribution lies within the Atlantic region, albeit in its northern part. Grieg states its distribution for Norway as follows: (Bidrag til Kundskaben om Hardangerfjordens Fauna; Bergens Museums Aarbok 1913, No. 1, p. 107):

"The southern limit of occurrence of Scalp. Str. on the Norwegian coast is Bergen. On our western coast it does not appear to penetrate up into the fjords, but is only found out in the rocky belt fringing the coast, as for instance at Solsvik 70—80 m. and on the coastal banks, where M. Sars found it in numbers, at 150—280 m., attached to the spines of Dorocidaris papillata. In contrast to these conditions on the west coast, S. S. is found in our northern waters not only out on the sea coast, but also up in the fjords; it was found for instance in Porsanger Fjord and Tanafjord. The same applies to the Throndhjem Fjord, where, according to Brock (l. c.) it is common in Hydroid-colonies in the deeper parts of the fjord".

**128. Balanus porcatus da Costa.**

Conspectus p. 377.

Bredefjord St. 32, 35—37 m., 2 spec.; St. 36, 29—100 m., several spec.

**129. Balanus crenatus Brug.**

Conspectus p. 378.

Kvanefjord St. 4, 20, 5—34 m., some spec. on a stone. — Bredefjord St. 32, 35—37 m., 4 spec.; St. 37, 20—30 m., 3 spec.; St. 46, 20—30 m., 2 spec.; St. 48, several spec.; St. 66, 9—11 m., 1 spec.;

St. 89, 16—17 m., 1 spec. — Tunugdliarfik St. 142, 14—18 m., some spec. — Skovfjord St. 151, 58—60 m., some spec. on stones.

A number of the specimens belong to the long form.

This very common species, which is found for the most part in shallower water than the foregoing, serves well to illustrate the state of our knowledge as to the distribution of the Balanidae; it has hitherto been recorded from only three places in W. Greenland, and not south of abt. 70° N.

130. **Balanus balanoides** L.

Conspectus p. 379.

Bredefjord, the bay at St. 62, in the water-line, 2 spec.

131. **Coronula diadema** L.

Conspectus p. 379.

Frederikshaab, found on the bottom of the harbour 1-7-1912, 1 spec.

The finding of this specimen is not without interest. The species is mentioned as from Greenland by FABRICIUS in the *Fauna Groenlandica* 1780, p. 425, No. 425, under the name of *Lepas balaenaris*, but has never been found since until now. It is characteristic, also, that it should have been mentioned by FABRICIUS, for Frederikshaab; where he was chaplain, is the richest haunt in W. Greenland of its host, Megaptera boops (*vide* H. WINGE, *Grønlands Pattedyr*; *Meddel. om Grønland*, vol. 21, 1902, p. 498).

132. **Sylon Hippolytes** Kr.

Conspectus p. 381.

Kvanefjord St. 4, 20,5—34 m., 1 spec.; St. 13, 34—40 m., 1 spec. — Bredefjord St. 32, 35—37 m., 1 spec.; St. 36, 29—100 m., 1 spec.; St. 48, 13 spec.; St. 61, 12,5—13 m., 1 spec.; St. 66, 9—11 m., 1 spec.; St. 79, 30—50 m., 1 spec. — Tunugdliarfik St. 142, 14—18 m., 5 spec.

All the specimens were found attached to *Spirontocaris Fabricii*, on which they have not hitherto been found. In 4 cases, the host had 2 specimens of the parasite (St. 48 and St. 142).

The species has not hitherto been known from W. Greenland S. of abt. 66 $\frac{3}{4}$ ° N. The present material is far larger than all which the Zool. Museum previously possessed from Greenland.

## PYCNOGONIDA.

133. **Pyenogonum littorale** Strøm.

Conspectus p. 382.

Bredefjord St. 53, 260 m., 1 spec.

This species, like *Coronula diadema* (No. 131) is mentioned in

FABRICIUS' Fauna Groenlandica 1780 (No. 212, p. 233) and has likewise never been found again since then.

134. *Phoxiehilidium femoratum* Rathke.

Conspectus p. 383.

Tunugdliarfik St. 141, 35—70 m., 1 spec.

This species is mentioned by KRØYER from Greenland, precise locality not stated; this is, however, the only record of its having been found there.

135. *Pseudopallene circularis* Goodsir.

Conspectus p. 386.

Kvanefjord St. 9, 22—24 m., 2 spec. — Bredefjord St. 32, 35—37 m., 2 spec.; St. 44, 165—190 m., 1 spec.; St. 46, 20—30 m., 1 spec.; St. 88, 40—70 m., 1 spec.

136. *Nymphon grossipes* O. Fabr.

Conspectus p. 388.

Kvanefjord St. 10, 19.5—54(?) m., 1 spec. (*N. glaciale*) — Bredefjord St. 32, 35—37 m., 1 spec. (*N. grossipes* Fabr.)

Not known from W. Greenland S. of abt.  $66\frac{1}{2}^{\circ}$  N.

137. *Nymphon longitarse* Kr.

Conspectus p. 391.

Bredefjord St. 91, 110—180 m., 1 spec. — Bredefjord Sermilik St. 110, 55—90 m., 1 spec. (with ova) — Skovfjord St. 145, 10—35 m., 1 spec.

138. *Nymphon Stroemii* Kr.

Conspectus p. 392.

A. *N. Stroemii* Kr. sensu str. Skovfjord St. 144, 250—300 m., 2 spec. (1 with ova); St. 155, 220 (240)—400 m., 1 spec.

B. *N. Stroemii* Kr.,  $\times$  *N. gracilipes* Heller. Bredefjord St. 76, 260—320 m., 1 spec. — Bredefjord Sermilik St. 116, 80—95 m., 1 spec. The specimen from St. 116 resembles mostly *N. gracilipes*.

139. *Nymphon macrum* Wilson.

Conspectus p. 396.

Bredefjord St. 34, 460—550 m., 1 spec.; St. 55, 310—330 m., 2 spec.

*Nymphon* sp.

Bredefjord St. 48, 1 spec.; St. 97, 250—280 m., 1 spec.

140. *Chaetonymphon hirtipes* Bell.

Conspectus p. 399.

Bredefjord St. 49, 490 m., 1 spec.; St. 55, 310—330 m., 2 spec.;  
St. 121, 700 m., 2 spec.

*Pyenogonid-larva.*

Bredefjord St. 66, 9—11 m., 1 spec.

## ECHINODERMATA.

The Echinodermata in the "Rink" material are included in Dr. TH. MORTENSEN'S work, Grønlands Echinodermer 1913 (Meddel. om Grønland, vol. 23, 1914, p. 299—399); the "Rink" specimens, however, are not separately noted there, nor is anything stated as to the stations at which they were taken.

In "Some new Echinoderms from Greenland" (Vid. Meddel. Dansk Naturhist. Foren. Kbhv., vol. 66, 1913(1915)), Dr. TH. MORTENSEN has on p. 37, described the new Asterid taken by the "Rink", *Pteraster hastatus* Mortensen.

The Echinodermata of Greenland will be found treated from a zoogeographical point of view by Dr. TH. MORTENSEN, in his "Report on the Echinoderms collected by the Danmark Expedition at North-east Greenland" (Meddel. om Grønland, vol. 45, 1910, p. 287—300).

The following list of the Echinoderms in the "Rink" material has been drawn up by Dr. TH. MORTENSEN, to whom I beg to express my best thanks for permission to publish the same here.

## Crinoidea.

141. *Heliometra glacialis* Leach.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 371.

Bredefjord St. 45, 430—450 m., 1 spec.; St. 55, 310—330 m., 6 spec.; St. 69, 290—355 m., 1 spec.; St. 97, 250—280 m., 1 spec.; St. 121, 700 m., 3 spec.

Rather common along the whole of W. Greenland 61°—81¾° N., 10—1200 m.

× 142. *Hathrometra Sarsii* Düb. Kor.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 373.

Bredefjord St. 55, 310—330 m., 2 spec.; St. 121, 700 m., 1 spec.

New for Greenland. Hitherto known only from W. Norway, 100—700 m.



**Asteroidea.****143. *Asterias Mülleri* Sars var. *groenlandica* Stp.**

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 343.

Bredefjord St. 48, 1 spec.; St. 88, 40—70 m., 1 spec. (with young); St. 127, 10—15 m., 1 spec. — Tunugdliarfik St. 139, 280—300 m., 1 spec.

Very common along the whole of W. Greenland. Littoral —800 m.

**144. *Asterias polaris* M. Tr.**

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 344.

Bredefjord St. 32, 35—37 m., 2 spec.; St. 46, 20—30 m., 1 spec.; St. 48, 3 spec.; St. 68, 60—95 m., 1 spec.; St. 88, 40—70 m., 1 spec.; St. 104, 7—20 m., 1 spec.

Rather common at W. Greenland 61°—73° N. Littoral —200 m.

**145. *Stichaster albulus* Stimps.**

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 342.

Kvanefjord St. 1, 84 m., 1 spec. — Bredefjord St. 33, 100—220 m., 16 spec.; St. 44, 165—190 m., 6 spec.; St. 103, 90—100 m., 2 spec. — Bredefjord Sermilik St. 110, 55—90 m., 14 spec.; St. 111, 115 m., 2 spec.; St. 112, 20—30 m., 2 spec. — Bredefjord St. 134, 85—140 m., 8 spec.; St. 135, 225—240 m., 1 spec. — Skovfjord St. 155, 220 (240)—400 m., 3 spec.

Very common along the whole of W. Greenland, littoral —450 (795) m.

**146. *Pedicellaster typicus* Sars.**

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 341.

Bredefjord St. 44, 165—190 m., 1 spec. — Skovfjord St. 155, 220 (240)—400 m., 1 spec.

At W. Greenland hitherto known only from 66¾° N. ("Tjalfe" exped.). 20—1130 m.

**147. *Henricia (Cribrella) sanguinolenta* O. Fr. Müll.**

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 340.

Kvanefjord St. 1, 84 m., 1 spec.; St. 10, 19,5—54 (?) m., 1 spec. — Bredefjord St. 40, 170—180 m., 2 spec.; St. 55, 310—330 m., 2 spec.; St. 68, 60—95 m., 2 spec.; St. 78, 30—50 m., 1 spec.; St. 79, 30—50 m., 1 spec. — Skovfjord St. 152, 80—120 m., 1 spec.; St. 156, 70—140 m., 1 spec.

Common along the whole of W. Greenland, littoral —2450 m.

148. *Solaster papposus* L.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 333.

Bredefjord St. 33, 100—220 m., 1 spec.

Rather common at W. Greenland, littoral — 1170 m.

149. *Pteraster militaris* O. Fr. Müll.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 336.

Bredefjord St. 112, 20—30 m., 1 spec.

Not very common at W. Greenland. 10—1100 m.

×× 150. *Pteraster hastatus* Mortensen.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 338.

Bredefjord St. 55, 310—330 m., 1 spec.

This species is not alone new to Greenland, but also new to science.

151. *Poraniomorpha tumida* Stuxberg.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 332.

Kvanefjord St. 6, 37—45 m., 1 spec.

Hitherto from W. Greenland only known from Umanak Fjord, 260 fath. 15—1200 m.

× 152. *Poraniomorpha hispida* M. Sars.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 332.

Bredefjord St. 55, 310—330 m., 1 spec.

New to Greenland.

× 153. *Astrogonium Parelly* Düb. Kor.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 329.

Bredefjord St. 70, 225—290 m., 1 spec.

New to Greenland.

154. *Ctenodiscus crispatus* Rtk.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 330.

Kvanefjord St. 3, 210—225 m., 4 spec.; St. 5, 420 m., 6 spec.; St. 11, 290—320 m., 1 spec.; St. 23, 200—410 m., 1 spec.; St. 25, 115 m., 15 spec. — Bredefjord St. 33, 100—220 m., 13 spec.; St. 45, 430—450 m., 19 spec.; St. 67, 220—310 m., 30—40 spec.; St. 68, 60—95 m., 2 spec.; St. 69, 290—355 m., 5 spec.; St. 70, 225—290 m., more than 100 spec.; St. 74, 90—200 m., 1 spec.; St. 75, 200—270 m., 4 spec.; St. 76, 260—320 m., 12 spec.; St. 77, 245—470(?) m., 4 spec.; St. 80, 365 m., 1 spec.; St. 87, 230 m., 11 spec.; St. 91, 110—180 m.,

21 spec.; St. 95, 115—155 m., 6 spec.; St. 97, 250—280 m., 12 spec.; St. 98, 520—560 m., 4 spec. — Bredefjord Sermilik St. 110, 55—90 m., 9 spec.; St. 117, 100—120 m., 3 spec. — Bredefjord St. 121, 700 m., 1 spec.; St. 127, 10—15 m., 1 spec.; St. 130, 900 m. w., 2 spec.; St. 134, 85—140 m., 6 spec.; St. 135, 225—240 m., many hundreds, about the whole of the dredge. — Tunugdliarfik St. 138, 300—360 m., 1 spec.; St. 139, 280—300 m., many spec. — Skovfjord St. 143, 65—90 m., 6 spec.; St. 146, 305—310 m., 5 spec.; St. 155, 220 (240)—400 m., 1 spec.

Rather common at W. Greenland  $61^{\circ}$ — $69\frac{1}{4}^{\circ}$  N. 10—1940 m.

### Ophiuroidea.

#### 155. *Ophiura (Ophioglypha) Sarsii* Ltk.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 348.

Kvanefjord St. 6, 37—45 m., 2 spec.; St. 25, 115 m., 1 spec. — Bredefjord St. 33, 100—220 m., 2 spec.; St. 70, 225—290 m., 2 spec.; St. 87, 230 m., 1 spec.; St. 91, 110—180 m., 1 spec. — Skovfjord St. 155, 220 (240)—400 m., several spec.

Very common at W. Greenland. 10—3000 m.

#### 156. *Ophiura (Ophioglypha) robusta* Ayres.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 349.

Bredefjord St. 75, 200—270 m., 1 spec.; St. 79, 30—50 m., 2 spec.; St. 87, 230 m., 2 spec.; St. 97, 250—280 m., 1 spec.; St. 127, 10—15 m., 1 spec. — Skovfjord St. 156, 70—140 m., 1 spec.

Very common at W. Greenland. 6—450 (1000) m.

#### 157. *Ophiocten sericeum* Forbes.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 351.

Bredefjord St. 103, 90—100 m., 1 spec.

Rather common at W. Greenland. 5—4000 m.

#### 158. *Ophiopholis aculeata* O. Fr. Müll.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 355.

Bredefjord St. 33, 100—220 m., 3 spec.; St. 40, 170—180 m., 1 spec.; St. 44, 165—190 m., 2 spec.; St. 46, 20—30 m., 1 spec. St. 53, 260 m., 1 spec.; St. 55, 310—330 m., 2 spec.; St. 68, 60—95 m., 1 spec.; St. 103, 90—100 m., 1 spec.; St. 134, 85—140 m., 7 spec. — Skovfjord St. 143, 65—90 m., 4 spec.; St. 152, 80—120 m., 4 spec.; St. 155, 220 (240)—400 m., 10 spec.; St. 156, 70—140 m., 3 spec.

Very common at W. Greenland. Littoral — 1880 m.

159. *Amphiura Sundevalli* M. Tr.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 357.

Bredefjord St. 33, 100—220 m., 1 spec.; St. 40, 170—180 m., 4 spec.; St. 44, 165—190 m., 2 spec.; St. 46, 20—30 m., 1 spec.; St. 68, 60—95 m., 1 spec.; St. 74, 90—200 m., 1 spec.; St. 75, 200—270 m., 4 spec.; St. 76, 260—320 m., 1 spec.; St. 81, 110 m., 1 spec.; St. 87, 230 m., 13 spec.; St. 91, 110—180 m., 2 spec.; St. 103, 90—100 m., 3 spec. — Bredefjord Sermilik St. 111, 115 m., 9 spec. — Bredefjord St. 127, 10—15 m., several spec.; St. 134, 85—140 m., 1 spec. — Skovfjord St. 143, 65—90 m., 1 spec.

Rather common at W. Greenland. 10—380 m.

160. *Amphiura denticulata* Koehler.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 358.

Bredefjord St. 34, 460—550 m., 3 spec.; St. 45, 430—450 m., 7 spec.; St. 49, 490 m., 2 spec.; St. 55, 310—330 m., 2 spec.; St. 120, 750(?) m., fragments; St. 121, 700 m., 6 spec.

Hitherto only known from W. Greenland  $64^{\circ}$ — $64\frac{1}{2}^{\circ}$  N. 155—1100 m.

161. *Ophiacantha bidentata* Retz.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 358.

Kvanefjord St. 1, 84 m., 1 spec.; St. 3, 210—225 m., 1 spec.; St. 25, 115 m., 12 spec. — Bredefjord St. 33, 100—220 m., 1 spec.; St. 40, 170—180 m., 17 spec.; St. 44, 165—190 m., 1 spec.; St. 53, 260 m., 14 spec.; St. 55, 310—330 m., 1 spec.; St. 75, 200—270 m., 5 spec.; St. 87, 230 m., 13 spec.; St. 91, 110—180 m., 10 spec.; St. 95, 115—155 m., 3 spec.; St. 109, 125—140 m., 2 spec.; St. 134, 85—140 m., 3 spec.; St. 135, 225—240 m., 2 spec. — Tunugdliarfik St. 138, 300—360 m., 1 spec.; St. 140, 125—175 m., 1 spec. — Skovfjord St. 143, 65—90 m., 17 spec.; St. 144, 250—300 m., 2 spec.; St. 155, 220 (240)—400 m., 19 spec.; St. 156, 70—140 m., several spec.

Very common at W. Greenland. 10—4500 m.

162. *Ophiacantha anomala* G. O. Sars.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 360.

Bredefjord St. 55, 310—330 m., 5 spec.; St. 121, 700 m., 2 spec.

Hitherto only known from W. Greenland  $64^{\circ}$ — $65^{\circ}$  N. 200—1400 m.

163. *Ophiolebes claviger* Ljg.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 361.

Bredefjord St. 34, 460—550 m., 1 spec.; St. 45, 430—450 m., 1 spec.; St. 55, 310—330 m., 4 spec.; St. 121, 700 m., 4 spec.

From W. Greenland hitherto only known from the "Tjalfe" exped. (without locality). 300—500 m.

164. *Ophiosecolex glacialis* M. Tr.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 361.

Bredefjord St. 55, 310—330 m., 1 spec.

From W. Greenland hitherto only known from 2 localities ( $66\frac{1}{2}^{\circ}$ — $71^{\circ}$  N.). 100—1800 m.165. *Gorgonocephalus Lamarekii* M. Tr.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 364.

Bredefjord St. 121, 700 m., 2 spec.

From W. Greenland hitherto only known from 2 localities ( $64\frac{1}{2}^{\circ}$ — $65\frac{1}{2}^{\circ}$  N.). 75—775 m.**Echinoidea.**166. *Strongylocentrotus droebachiensis* O. Fr. Müll.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 365.

Kvanefjord St. 4, 20, 5—34 m., 1 spec.; St. 6, 37—45 m., 1 spec.; St. 9, 22—24 m., 3 spec.; St. 25, 115 m., 2 spec. — Bredefjord St. 32, 35—37 m., 3 spec.; St. 33, 100—220 m., 5 spec.; St. 37, 20—30 m., 2 spec.; St. 40, 170—180 m., 2 spec.; St. 44, 165—190 m., 1 spec.; St. 46, 20—30 m., 3 spec.; St. 48, 3 spec.; St. 68, 60—95 m., 2 spec.; St. 70, 225—290 m., 1 spec.; St. 79, 30—50 m., 5 spec.; St. 88, 40—70 m., 2 spec.; St. 92, 50—90 m., 1 spec.; St. 103, 90—100 m., 2 spec.; St. 109, 125—140 m., 2 spec.; St. 127, 10—15 m., 3 spec.; St. 134, 85—140 m., 6 spec. — Tunugdliarfik St. 141, 35—70 m., 1 spec. — Skovfjord St. 143, 65—90 m., 2 spec.; St. 144, 250—300 m., 1 spec.; St. 145, 10—35 m., many hundreds, filled about the whole of the dredge; St. 152, 80—120 m., 1 spec.; St. 155, 220 (240)—400 m., 1 spec.

Extremely common at W. Greenland. Littoral — 1170 m.

**Holothurioidea.**167. *Myriotrochus Rinkii* Stp.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 318.

Bredefjord St. 127, 10—15 m., 5 spec. — Skovfjord St. 136 (the harbour of Narssak), 6 m., 1 spec.

Rather common at W. Greenland. Littoral — 650 m.

168. *Chirodota laevis* Fabr.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 317.

Skovfjord St. 136 (the harbour of Narssak), 6 m., several spec. Not rare at W. Greenland. Littoral — 380 m.

169. *Eupyrgus scaber* Ltk.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 319.

Bredefjord St. 127, 10—15 m., 10 spec.

From W. Greenland hitherto only known from Arsuk (ca. 61° N.).  
7—480 m.

× 170. *Molpadia oolitica* Pourt.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 320.

Bredefjord St. 45, 430—450 m., 2 spec.; St. 120, 750 m., 1 spec.;  
St. 121, 700 m., 1 spec.

New to Greenland.

171. *Laetmogone violacea* Théel.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 322.

Bredefjord St. 49, 490 m., 10 spec.; St. 70, 225—290 m., 1 spec.;  
St. 77, 245—470 m., 1 spec.

From W. Greenland hitherto only known 63°17' N. ("Tjalfe" exped.).  
225—1750 m.

172. *Cucumaria frondosa* Gunn.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 322.

Bredefjord St. 46, 20—30 m., 1 spec.; St. 48, 1 spec. — Skov-  
fjord St. 152, 80—120 m., 1 spec.

Rather common at W. Greenland. Littoral —200 m.

173. *Cucumaria calcigera* Stimps.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 323.

Bredefjord St. 87, 230 m., 1 spec.

Rather common at W. Greenland. 5—500 m.

174. *Phyllophorus pellucidus* Flem.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 325.

Bredefjord St. 87, 230 m., 1 spec.

Not rare at W. Greenland. 10—380 m.

175. *Psolus Fabricii* Düb. Kor.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 324.

Bredefjord St. 33, 100—220 m., 5 spec.; St. 40, 170—180 m.,  
1 spec.; St. 87, 230 m., 1 spec.; St. 88, 40—70 m., 1 spec.

Common at W. Greenland. 4—270 m.

176. *Psolus phantapus* Strsf.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 324.

Bredefjord St. 33, 100—220 m., 7 spec.; St. 75, 200—270 m., 1 spec.; St. 88, 40—70 m., 1 spec.

Somewhat rare at W. Greenland. Littoral —380 m.

× 177. *Psolus valvatus* Östergr.

Th. Mortensen, Grønlands Echinodermer 1913 (1914), p. 325.

Bredefjord St. 55, 310—330 m., 1 spec.

New to Greenland.

## ANTHOZOA.

## ALCYONARIA.

The following section is an extract from the manuscript of Prof. H. JUNGENSEN's work on coral animals in the *Conspectus Faunae Groenlandicae* (Meddel. om Grøn., vol. 23) which will shortly be published, and to which I may refer for further particulars.

I beg to express my best thanks to Prof. JUNGENSEN for the permission to publish this list of the "Rink" material.

## Alcyonacea.

178. *Eunephthya glomerata* (Ltk. M. S.) Verrill.

Bredefjord St. 121, 700 m., 1 spec.

179. *Eunephthya fruticosa* (M. Sars) Jungersen.

Kvanefjord St. 1, 84 m., several spec. — Bredefjord St. 55, 310—330 m.; St. 111, 115 m., 3 spec.; St. 134, 85—140 m., 1 spec. — Skovfjord St. 143, 65—90 m., 3 spec.

180. *Eunephthya florida* Rathke.

Bredefjord St. 121, 700 m., 1 spec.

This species has not hitherto been found in W. Greenland; it is recorded, however, from Cape Tobin, at 57 fath. and in Turner Sound, 3 fath. (E. Greenland).

## Gorgonacea.

× 181. *Primnoa resedaeformis* Gunn.

Bredefjord St. 55, 310—330 m.; St. 69, 290—355 m.

This species is new to Greenland.

× × 182. *Stenogorgia borealis* (n. sp.) Jungersen.

Bredefjord St. 121, 700 m.

This species is not only new to Greenland, but also to science.

## PISCES.

With regard to the literature on Greenland fish, reference may be made to the work of AD. S. JENSEN, shortly to be published in Meddel. om Grønl. vol. 21.

This section of the material is very small, owing to the fact that no real fishing implements were employed: all that was taken having been brought up incidentally by the dredge or the ringtrawl. Some few larger fish from Kvanefjord were however, purchased from a fisherman at Frederikshaab. The "Rink" collection of fish has been kindly determined by Museumsinspector AD. S. JENSEN, to whom I beg to express my thanks for the following list.

183. *Sebastes marinus* L.

Bredefjord St. 116, 80—95 m., 1 spec.; St. 109, 125—140 m., 1 spec. — Kvanefjord St. 5, 420 m., 1 otolith.

184. *Cottus scorpius* L.

Bredefjord St. 89, 16—17 m., 1 spec.; St. 104, 7—20 m., 1 spec. juv.

185. *Triglops Pingelii* Reinh.

Bredefjord Sermilik St. 115, 500 m., 1 spec.

186. *Centridermichthys uncinatus* Reinh.

Kvanefjord St. 10, 19.5—54(?) m. — Bredefjord St. 103, 90—100 m., 1 spec. — St. 109, 125—140 m., 1 spec. — Bredefjord Sermilik St. 110, 55—90 m., 2 spec.

187. *Iceelus bicornis* Reinh.

Kvanefjord St. 6, 37—45 m., 1 spec. — Bredefjord St. 75, 200—270 m., 1 spec.

188. *Centronotus fasciatus* Bl. Schn.

Bredefjord St. 62, 10—15 m., 1 spec.

189. *Gymnelis viridis* Fabr.

Bredefjord St. 48, 500 m. w., 1 spec.



190. *Cyclopterus spinosus* Fabr.

Bredefjord St. 48, 500 m. w., 2 spec.; St. 79, 30—50 m., 1 spec.

191. *Liparis liparis* L.

Bredefjord St. 104, 7—20 m., 1 spec.

192. *Lycodes VahlII* Reinh.

Kvanefjord, south of the northern caplin-place, 2 spec.

193. *Hippoglossoides platessoides* Fabr.

Kvanefjord, south of the northern caplin-place, 1 spec.

194. *Salmo alpinus* L.

Bredefjord, a little river in the bay at St. 62, 1 spec.

195. *Scopelus glacialis* Reinh.

Bredefjord, St. 131, 800 m. w., 1 spec.

196. *Raia radiata* Don.

Kvanefjord, south of the northern caplin-place, 2 spec. —  
 Bredefjord St. 45, 430—450 m., 1 egg-capsule; St. 49, 490 m., 1 egg-capsule; St. 55, 310—330 m., 1 egg-capsule; St. 121, 700 m., 1 egg-capsule.

## LIST OF THE STATIONS.

## 1. Marine stations.

Kvanefjord, St. 1—28. Map see fig. 30 (the next page).

St. 1, 21. 6. 1912. — 84 m., 2°—2,4°, salinity 32,5 ‰; stones without algae.

Nectocrangon lar, 1  
 Spirontocaris polaris, 1

Stichaster albulus, 1  
 Henricia (Cribrella) sanguinolenta, 1  
 Ophiacantha bidentata, 1

Eunephthya fruticosa, several spec.

St. 2, 21. 6. 1912. — 17—19 m., 3°, salinity 31.0—31.6 ‰; clay with algae.

Hyas coarctatus, 1  
 Nectocrangon lar, 1

Spirontocaris Lilljeborgii, 1

St. 3, 22. 6. 1912. — 210—225 m., 3°, salinity 33.8 ‰; clay and stones with Bryozoa etc.

Pandalus borealis, 1  
 Aeginella spinosa, 1

Ctenodiscus crispatus, 4  
 Ophiacantha bidentata, 1

St. 4, 22. 6. 1912. — 20,5—34 m.,  $1,5^{\circ}$ — $2,0^{\circ}$ , salinity 31,5—32,2 ‰; brown and red algae with stones.

*Hyas coarctatus*, 8

*Eupagurus pubescens*, 1

*Spirontocaris Fabricii*, 3 (1 with

*Sylon Hippolytes*)

— *Gaimardii*, 1

— *Lilljeborgii*, 1

— *turgida*, 8

*Spirontocaris polaris*, 4

*Syrrhoë crenulata*, 1

*Balanus crenatus*, some spec.

*Sylon Hippolytes*, 1

*Strongylocentrotus droebachiensis*,

1

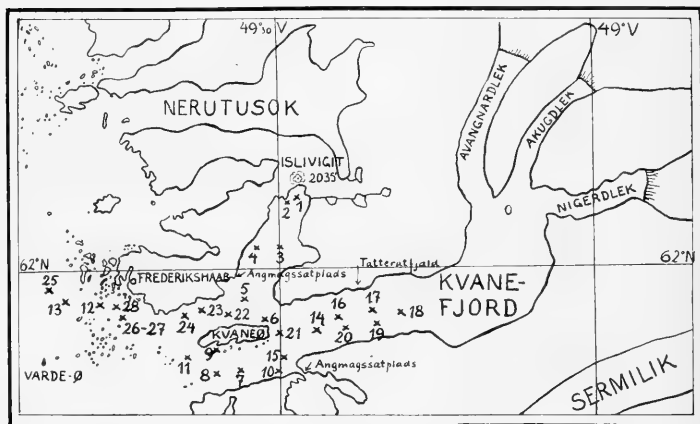


Fig. 30. Map of Kvane fjord. (Angmagssætplads = caplin-place.)

St. 5, 23. 6. 1912. — 420 m.,  $3^{\circ}$ , salinity 34,1 ‰; clay with a few stones.

*Chionoecetes Phalangium*, 1

*Ctenodiscus crispatus*, 6

*Sebastes marinus*, 1 otolith

St. 6, 23. 6. 1912. — 37—45 m.,  $0,7^{\circ}$ — $0,5^{\circ}$ , 31,8—32,1 ‰ salinity; shell-fragments (very small and undeterminable) with a few stones.

*Hyas coarctatus*, 1

*Spirontocaris turgida*, 8

— *polaris*, 1

*Rhachotropis aculeata*, 1

*Ampelisca Eschrichtii*, 5

*Strongylocentrotus droebachiensis*, 1

*Ophioglypha (Ophiura) Sarsii*, 2

*Poraniomorpha tumida*, 1

*Icelus bicornis*, 1.

St. 7, 25. 6. 1912. — 210—230 m.,  $1^{\circ}$ — $2^{\circ}$ , salinity 33,3 ‰; stones and a little clay. No content of the animals to be dealt with in this paper.

St. 8, 25. 6. 1912. — 140 m.,  $0,2^{\circ}$ , 33,0 ‰ salinity; clay with a few stones and dead algae. No content of the animals to be dealt with in this paper.

- St. 9, 25. 6. 1912. — 22—24 m., 1°, salinity 32.2—32.1 ‰; algae.  
*Hyas coarctatus*, 4 *Pseudopallene circularis*, 2  
*Spirontocaris turgida*, 1  
— *polaris*, 2 *Strongylocentrotus droebachiensis*, 3.  
*Pleustes panoplus*, 1

St. 10, 25. 6. 1912. — 19.5—54(?) m., 1.5—0.8 ‰; salinity 31.8—32.1 ‰; stones with algae and a little clay.

- |   |   |
|---|---|
| <i>Hyas coarctatus</i> , 15                                       | <i>Paroediceros lynceus</i> (in algae on the anchor, 12—14 m.), 1 |
| <i>Spirontocaris Lilljeborgii</i> , 1                             | <i>Gammarus locusta</i> , 1                                       |
| <i>Onisimus Edwardsii</i> (in algae on the anchor, 12—14 m.), 1   | <i>Caprella septentrionalis</i> , 1                               |
| <i>Pontoporeia femorata</i> (in algae on the anchor, 12—14 m.), 1 | <i>Nebalia bipes</i> , 4  |
| <i>Syrrhoë crenulata</i> , 3                                      | <i>Nymphon glaciale</i> , 3                                       |
|   | <i>Henricia</i> ( <i>Cribrella</i> ) <i>sanguinolenta</i> 1       |
|   | <i>Centridermichthys uncinatus</i> , 1.                           |

- St. 11, 25. 6. 1912. — 290—320 m., temp.?, salinity 34.0 ‰; stony clay.  
*Pandalus borealis*, 1 *Ctenodiscus crispatus*, 1.  
*Spirontocaris polaris*, 1, with  
*Phryxus abdominalis*

St. 12, 26. 6. 1912. — 290—400 m., 0.7°—?, salinity? — 33.3 ‰; stones with a little clay.  
*Spirontocaris polaris*, 1.

St. 13, 26. 6. 1912. — 34—40 m., 1°, 32.1 ‰ salinity; algae with Hydroids.

- |                                   |  |
|-----------------------------------|--|
| <i>Hyas araneus</i> , 1           | <i>Pontogeneia inermis</i> , 5               |
| — <i>coarctatus</i> , 5           | <i>Ischyrocerus anguipes</i> , several spec. |
| <i>Spirontocaris Fabricii</i> , 4 | <i>Caprella septentrionalis</i> , 1          |
| <i>Amphithoë assimilis</i> , 1    | <i>Squilla Hippolytes</i> , 1                |

St. 14, 27. 6. 1912. — 330—500 m., 2.8—3.0°, salinity 34.1—33.7 ‰; clay with stones. No content of the animals to be dealt with in this paper.

St. 15, 28. 6. 1912. — Plankton-net, surface, 15 min. 1 ccm. — Cirripede-cyprides and some detritus.

St. 16, 28. 6. 1912. — 440—460 m., 2.0°, salinity 33.7 ‰. No content.

St. 17, 28. 6. 1912. > 700 m.(?). Hydrography see further on (p. 364).  
 Could not reach bottom. At St. 18 a little to the east of this station, the dredge did not touch bottom, although out with 700 m. w.

St. 18, 28. 6. 1912.

Both sides of the fjord are very steep here; the dredge with 700 m. w. out failed to touch bottom.

St. 19, 28. 6. 1912. — Plankton-net, surface, 15 min., 2 ccm.

*Hyas coarctatus*, Zoea, 1

Small Calanidae and Euphausid-larvae.

St. 20, 28. 6. 1912. — Plankton-net, surface, 15 min., 6 ccm.

Small Calanidae.

St. 21, 29. 6. 1912. — Plankton-net, surface, 15 min., 0.2 ccm.

?*Calliopius Rathkei*, 1

Cirripede-cyprides.

St. 22, 29. 6. 1912. — > 470 m., 3°, salinity 33.8 ‰.

Could not reach bottom; dredging therefore not attempted.

St. 23, 29. 6. 1912. — 200—410 m., 1.6—3.0°, salinity 33.7 ‰—?; clay with partly very large stones.

*Ctenodiscus crispatus*, 1.

St. 24, 29. 6. 1912. — Hydrography, see further on (p. 364).

St. 25, 3. 7. 1912. — 115 m., 0°, salinity?; clay with some stones and fragments of shells.

*Chionoecetes Phalangium*, 1

*Hyas coarctatus*, 1

*Pandalus borealis*, 2

*Ctenodiscus crispatus*, 15

*Ophiura Sarsii*, 1

*Ophiacantha bidentata*, 12.

St. 26—27, (3) 5. 7. 1912. — Nansen-net. Depth > 300 m.

25—0 m., 1.5 ccm. Small Calanidae about 65 ‰, Cirripede-cyprides (and Euphausid-larvae) about 35 ‰. — 50—25 m., 2 ccm. *Hyas coarctatus*, Zoea, about 15 spec. Small Calanidae; some young Euphausidae and Cirripede-cyprides. — 75—50 m., 1 ccm. Small Calanidae; young Euphausidae; Cirripede-nauplii and — cyprides. Some Sagitta. — 100—75 m., 3 ccm. Small Calanidae; a few Cirripede-nauplii and — cyprides. — 125—100 m., 4 ccm. ?*Parathemisto obliqua*, 1?; small Calanidae; a few Cirripede-nauplii and — cyprides. — 150—125 m., 5 ccm. Small Calanidae with a few *Calanus finmarchicus* and some Cirripede-cyprides. — 200—150 m., 1 ccm. *Thysanoessa inermis*, 1. *Parathemisto obliqua*, 1. Some *Calanus finmarchicus* and some small Calanidae; some Sagitta. — 250—200 m., 2 ccm. *Euthemisto libellula*, 1. Several *Calanus finmarchicus*, and a few small Calanidae. — 300—250 m., 1.5 ccm. Some young Euphausidae. *Calanus finmarchicus* (abt. 0.75 ccm.)



Fig. 31. Map of Bredefjord with adjacent fjords.



and a few *C. hyperboreus*. Small Calanidae. Cirripede-nauplii and (several) — cyprides. Sagitta. Ctenophora.

St. 28, 5. 7. 1912. — Ringtrawl. 400 m. w., 25 min.

Hyas coarctatus, Zoea, 35	?Apherusa glacialis, 1
Euthemisto libellula, 4	Cirripede-nauplii.
Decapod-larvae, several spec.	

That the yield from this station was so small in comparison with the other ringtrawl hauls is due to the fact that here, as elsewhere mentioned, the whole of the contents was not filtered, but an attempt made to pick out the specimens separately; a method which doubtless occasioned considerable loss. —

In the bay south of the northern caplin-place in Kvanefjord (where the Eskimos from Frederikshaab fish for the caplin (*Angmagssæt*, *Malotus arcticus*) some long lines were set out on the 30. 6. 1912 by DANIEL KLEIST, a smith from Frederikshaab. The resultant yield was as follows:

2 <i>Somniosus microcephalus</i>	22 <i>Gadus uvak</i>
25 <i>Raia radiata</i>	5 <i>Lycodes Vahl</i>
25 <i>Hippoglossoides platessoides</i>	7 <i>Anarrhichas minor</i>
5 <i>Gadus morrhua</i>	

Some of these fish were purchased and brought home to the Zool. Museum.

**Bredefjord**, St. 29—109, 120—135 (see the map fig. 31).

St. 29, 15. 7. 1912. — 60°35' N., 46°53' W. Plankton-net, surface, 10 min., 2 cem.

Euthemisto libellula, 3. Small Calanidae and some detritus.

St. 30, 15. 7. 1912. — 60°30' N., 46°53' W. Nansen-net. Hydrography see further on (p. 363).

10—0 m., 5 cem. Almost nothing but small Calanidae. Some young Euphausiidae and Cirripede-cyprides. — 25—10 m., 3 cem. Content about like that from 10—0 m. — 50—25 m., 2 cem. Content like that from 25—10 m., but with some Appendiculariae. — 75—50 m., 1 cem. Content like that from 50—25 m., with 1 *Hyas coarctatus*, Zoea. — 100—75 m., 1 cem. Small Calanidae and a few Calan. finmarch. — 125—100 m., 1 cem. *Calanus finmarchicus*. — 150—125 m., 3 cem. Calan. finmarch. with a few *C. hyperboreus*. — 200—150 m., 15 cem. Calan. finmarch. — 250—200 m., 1.5 cem. *Euthemisto compressa* 1; besides almost only Calan. finmarch. — 350—250 m., 2 cem. (Calanidae 1 cem). *Euthemisto compressa* 1; *Parathemisto obliqua*, 2. *Calanus finmarchicus*; many small Calanidae, among others *Pseudocalanus elongatus*. Sagitta, Tomopteris. — 450—350 m., 2 cem. (Calanidae 1 cem.). *Boreomysis arc-*

ticus, 2. Young Euphausidae. *Calanus finmarchicus*; small Calanidae. Tomopteris. — 550—450 m., 3 cem. (Calanidae 2 cem.). *Parathemisto obliqua*, 6. *Apherusa glacialis*, 2. *Calanus finmarchicus* with a few *Calan. hyperboreus* and some small Calanidae. *Conchoesia* sp., 2 spec.

St. 31, 15. 7. 1912. 60°31' N., 46°54' W. — Ringtrawl, 700 m. w., 15 min., 75 cem. (incl. 50 cem. Copepoda).

<i>Hyas coarctatus</i> , Zoea, 5	<i>Euthemisto libellula</i> , abt. 20
<i>Pontophilus norvegicus</i> , Zoea, 1	— <i>bispinosa</i> , 9
<i>Munida Bampfica</i> , Zoea, 4	— <i>compressa</i> , 8 cem.
Young Euphausidae, 1	<i>Parathemisto obliqua</i> , 15 cem.
<i>Thysanoessa inermis</i> , 1	<i>Apherusa glacialis</i> , 1
— <i>longicauda</i> , 12	<i>Calanus finmarchicus</i> , 99% of the Copepoda
— <i>Raschii</i> , 1	<i>Pseudocalanus elongatus</i> , 1% of the Copepoda.
<i>Boreomysis arctica</i> , 5	
<i>Mysis mixta</i> , 2	

St. 32, 16. 7. 1912. 60°32' N., 46°53' W. — 35—37 m., 0.7°, salinity 32.1 ‰; stones with algae.

<i>Hyas coarctatus</i> , abt. 10	<i>Amphithopsis megalops</i> , 1
<i>Sclerocrangon boreas</i> , 6	<i>Amathilla pinguis</i> , 1
<i>Spirontocaris Fabricii</i> , 4 (1 with Sylon)	<i>Ischyrocerus anguipes</i> , abt. 10
— <i>turgida</i> , 3	<i>Dulichia spinosissima</i> , abt. 10
— <i>polaris</i> , 5	<i>Caprella septentrionalis</i> , 5
— <i>groenlandica</i> , 2	<i>Herpyllobius arcticus</i> , 1
<i>Mysis oculata</i> , 1	<i>Balanus porcatus</i> , 2
? <i>Tryphosa nanoides</i> , 1	— <i>crenatus</i> , 4
<i>Monoculodes borealis</i> , 1	Sylon <i>Hippolytes</i> , 1
<i>Paramphithoë bicuspis</i> , 6	<i>Pseudopallene circularis</i> , 2
— <i>assimilis</i> , 1	<i>Nymphon grossipes</i> , 1
<i>Parapleustes glaber</i> , 1	<i>Asterias polaris</i> , 1
<i>Acanthonotosoma serratum</i> , 2	<i>Strongylocentrotus droebachiensis</i> , 3.

St. 33, 16. 7. 1912. Between St. 32 and St. 34. — 100—220 m., 0.4—2.8°, salinity 33.1—34.1 ‰; stones without algae.

<i>Stichaster albus</i> , 16	<i>Amphiura Sundevalli</i> , 1
<i>Solaster papposus</i> , 1	<i>Ophiacantha bidentata</i> , 1
<i>Ctenodiscus crispatus</i> , 13	<i>Strongylocentrotus droebachiensis</i> , 5
<i>Ophioglypha Sarsii</i> , 2	<i>Psolus Fabricii</i> , 5
<i>Ophiopholis aculeata</i> , 3	— <i>phantapus</i> , 7



**St. 34**, 16. 7. 1912. 60°32' N., 46°54' W. — 460 — > 550 m., 3.8—4°, salinity 35.2 ‰.

From the slight remains in the dredge, the bottom here would seem to have been clay; evidently however, the implement only worked in the bottom for a short part of the haul.

Caprella Rinkii, 1	Ophiolebes claviger, 1
Nymphon macrum, 1	Amphiuira denticulata, 1.

**St. 35**, 16. 7. 1912. = St. 31. — Ringtrawl, 400 m. w., 20 min., 75 ccm. incl. 50 ccm. Copepoda.

Thysanoessa inermis, 2	Calanus finmarchicus, 95 ‰ of the
— longicaudata, 2	Copepoda
Euthemisto libellula, abt. 20	Euchaeta norvegica, 5 ‰ of the
— bispinosa, abt. 20 ccm.	Copepoda.
— compressa, abt. 30 spec.	

**St. 36**, 16. 7. 1912. 60°32' N., 46°55' W. — 29—100(?) m., 1—0.7°, 32.2—33.2 ‰ salinity.

Chiefly shell gravel, with stones and some few algae. The great depth (100 m.) appears to be due to a hole in the bottom; the dredge can hardly have been deeper down than abt. 50 m.

The content here strikingly resembles that from St. 32, but is less rich.

Hyas coarctatus, 2	Paramphithoë assimilis, 2
Sclerocrangon boreas, 1	Ischyrocerus anguipes, abt. 10
Spirontocaris Fabricii, abt. 10 (1	Dulichia spinosissima, 2
with Sylon)	Balanus porcatus, several spec.
Socarnes VahlII, abt. 15	Sylon Hippolytes, 1
Acanthonotosoma serratum, 2	

**St. 37**, 17. 7. 1912. 60°29' N., 46°52' W. — 20—30 m., 1.25—0.9°, salinity 31.5—32.1 ‰; Laminariae.

Hyas coarctatus, abt. 10	Amathilla pinguis, 1
Sclerocrangon boreas, 1	Dulichia spinosissima, 2
Spirontocaris groenlandica, 1	Ischyrocerus anguipes, several spec.
Paramphithoë bicuspis, abt. 20	
Acanthonotosoma serratum, abt. 10	Strongylocentrotus droebachiensis, 2.
Pontogeneia inermis, 5	

**St. 38**, 17. 7. 1912. 60°29' N., 46°53' W. — 290—320 m., 3.5—3.7°, salinity 34.4—34.6 ‰.

The dredge here stuck in the bottom, and had to be cut away, with 350 m. of line.

**St. 39**, 17. 7. 1912. 60°30' N., 46°51' W. — Plankton-net, surface, 10 min., 3 ccm. Small Calanidae.

St. 40, 17. 7. 1912. 60°31' N., 46°49' W. — 170—180 m., 3—2.5°, 34.3—34.0 ‰ salinity

NB. The temperature and salinity from 170 m. at this station do not agree with the proper figures for that depth, but rather correspond to abt. 250 m. (*vide* St. 30); both the lead and the sounding apparatus however, showed 170 m.

Shell-fragments with stones.

Hyas coarctatus, 1	Amphiura Sundevalli, 4
Eupagurus pubescens, 1	Ophiacantha bidentata, 17
Spirontocaris polaris, 3	Strongylocentrotus droebachiensis, 2
Henricia (Cribrella) sanguinolenta, 2	Psolus Fabricii, 1.
Ophiopholis aculeata, 1	

St. 41, 17. 7. 1912. 60°32' N., 46°49' W. — Plankton-net, surface, 15 min., 5 ccm. Small Calanidae.

St. 42, 17. 7. 1912. 60°34' N., 46°51' W. — Plankton-net, surface, 15 min., 7 ccm. Small Calanidae.

St. 43, 17. 7. 1912. 60°35' N., 46°52' W. — Plankton-net, surface, 10 min., 3 ccm. Small Calanidae.

St. 44, 18. 7. 1912. 60°35' N., 46°48' W. — 165—190 m., 2.0—2.8°, ?—34.0 ‰ salinity.

Bottom small stones and clay; of the latter, however, no traces were found in the dredge, but some remained adhering to the lead.

The yield was very small, and the net was found to be broken when hauled up. The Eskimos declared that they could tell from the smell that it had been bitten through by a Greenland shark.

Pseudopallene circularis, 1	Ophiopholis aculeata, 2
	Amphiura Sundevalli, 2
Stichaster albus, 6	Ophiacantha bidenticulata, 1
Pedicellaster typicus, 1	Strongylocentrotus droebachiensis, 1.

St. 45, 18. 7. 1912. 60°36' N., 46°47' W. — 430—450 m., 4—3.4°, 34.7 ‰ salinity; clay.

Munidopsis curvirostra, 3	Ctenodiscus crispatus, 19
Boreomysis arctica, 1	Amphiura denticulata, 7
Gnathia sp., 1	Ophiolebes claviger, 1
	Molpadia oolitica, 2
Heliometra glacialis, 1	Raia radiata, 1 egg-capsule.

**St. 46,** 18. 7. 1912. 60°37' N., 46°47' W. — 20—30 m., 1—0.5°, salinity 31.2—32.0 ‰. Shell-fragments with partly very large stones.

<i>Hyas coarctatus</i> , 5	<i>Asterias polaris</i> , 1
<i>Anonyx nugax</i> , 1	<i>Ophiopholis aculeata</i> , 1
<i>Halirages fulvocinctus</i> , 2	<i>Amphiura Sundevalli</i> , 1
<i>Ischyrocerus anguipes</i> , 1	<i>Strongylocentrotus droebachiensis</i> , 3
<i>Balanus crenatus</i> , 2	<i>Cucumaria frondosa</i> , 1
<i>Pseudopallene circularis</i> , 1	

**St. 47,** 18. 7. 1912. 60°45' N., 46°47' W. — Ringtrawl, 600 m. w., 20 min., 250 cem. (incl. 125 cem. Copepoda).

<i>Pontophilus norvegicus</i> , Zoea, 1	<i>Euthemisto libellula</i> , ca. 60
<i>Thysanoessa inermis</i> , 2	— <i>bispinosa</i> , ca. 45
— <i>longicaudata</i> , 4	— <i>compressa</i> , abt. 175
	<i>Parathemisto obliqua</i> , 100 cem.

**St. 48,** 19. 7. 1912. 60°34' N., 46°49' W. — Ringtrawl, 600 m. w., 30 min.

This haul should be regarded as a dredge, the ringtrawl having for some distance at least been working in the bottom itself, the depth being found to be far less than could be expected (no soundings had been taken). The contents of the net included weed and shell gravel among which were enormous quantities of the usual shallow water organisms.

<i>Hyas coarctatus</i> , abt. 10	<i>Paroediceros lynceus</i> , 2
<i>Sclerocrangon boreas</i> , abt. 10	<i>Monoculodes latimanus</i> , several
<i>Spirontocaris Fabricii</i> , ½ liter, (11 with <i>Sylon</i> , 1 with <i>Phryxus</i> abd.)	— <i>borealis</i> , 7
<i>Spirontocaris Lilljeborgii</i> , abt. 30	<i>Paramphithoë bicuspis</i> , abt. 10
— <i>turgida</i> , abt. 15 (1 with <i>Phryxus</i> abd.)	<i>Acanthonotosoma serratum</i> , abt. 60
— <i>polaris</i> , abt. 100	<i>Pontogeneia inermis</i> , 2
— <i>groenlandica</i> , abt. 10	<i>Amphithopsis megalops</i> , 4
— <i>microceros</i> , 1	<i>Rhachotropis inflata</i> , 2
? <i>Thysanoessa Raschii</i> , 1	<i>Protomedeia fasciata</i> , 1
<i>Mysis oculata</i> , 3 (2 with <i>Dajus Mysidis</i> )	<i>Ischyrocerus anguipes</i> , several
<i>Euthemisto libellula</i> , 1	<i>Dulichia spinosissima</i> , abt. 50
— <i>compressa</i> , 1	<i>Phryxus abdominalis</i> , 3, on <i>Spiront. turgida</i> and <i>S. Lilljeborgii</i>
<i>Parathemisto obliqua</i> , abt. 25	<i>Bopyroides Hippolytes</i> , 12, on <i>Spiront. polaris</i> and <i>S. Lilljeborgii</i>
<i>Anonyx nugax</i> , 4	<i>Dajus Mysidis</i> , 2
<i>Onisimus Edwardsii</i> , 1	<i>Herpyllobius arcticus</i> , 2
<i>Stegocephalus inflatus</i> , 6	<i>Balanus crenatus</i> , some spec.
<i>Syrrhoë crenulata</i> , several	<i>Sylon Hippolytes</i> , 13

Nymphon sp., 1	Strongylocentrotus droebach., 1
	Cucumaria frondosa, 1
Asterias Mülleri var. groenlandica, 1	
— polaris, 3	Gymnelis viridis, 1
	Cyclopterus spinosus, 2.

St. 49, 19. 7. 1912. 60°33' N., 46°47' W. — 490 m., 3.4—4.5°, 34.6—35.0 ‰ salinity; clay.

Chaetonymphon spinosum, 1	Amphiura denticulata, 2
	Laetmogone violacea, 10
Raia radiata, 1 egg-capsule	

St. 50, 20. 7. 1912. 60°34' N., 46°49' W. — Ringtrawl, 100 m. w., 15 min., 3 ccm.

Hyas coarctatus, Zoea, 2	different small Copepoda
Decapod-larvae (defective)	Calanus finmarchicus, 1.5 ccm.
Euphausid-larvae	Cirripede-larvae
	Sagitta

St. 51, 20. 7. 1912, 60°34' N., 46°48' W. — Ringtrawl, 200 m. w., 20 min.

In the content was not found any of the species to be dealt with in this paper.

St. 52, 20. 7. 1912. 60°34' N., 46°47' W. — Ringtrawl, 300 m. w., 20 min.  
No content.

St. 53, 20. 7. 1912. 60°35' N., 46°45' W. — 260 m., 2.8°, 34.1 ‰ salinity; bottom?

Dulichia spinosissima, 1	Ophiopholis aculeata, 1
Pycnogonum littorale, 1	Ophiacantha bidentata, 1

St. 54, 20. 7. 1912. 60°35' N., 46°45' W. — 420 m., 2°, 34.6 ‰ salinity.

Bottom not reached, though dredge was out on 500 m. w.

St. 55, 20. 7. 1912. 60°34' N., 46°45' W. — 310—330 m., 3.5—2°, 34.7—34.4 salinity; clay with a few small stones.

Calathura brachiata, 1	Nymphon macrum, 2
Ianira maculosa, 1	Chaetonymphon spinosum, 2
Eurycope producta, 2	
?Saccopsis Terebellidis, 3, on Leuc-	Helioметра glacialis, 6
ariste arcticus	Hathrometra Sarsii, 2
Scalpellum Stroemii, 2	Henricia (Cribrella) sanguinolenta, 2
	Pteraster hastatus, 1

Poraniomorpha hispida, 1	Ophioscolex glacialis, 1
Ophiopholis aculeata, 2	Psolus valvatus, 5
Ophiura denticulata, 2	
Ophiacantha bidentata, 1	Raia radiata, 1 egg-capsule
— anomala, 1	
Ophiolebes claviger, 4	Primnoa resedaeformis, several spec.
	Eunephthya fruticosa

St. 56, 20. 7. 1912 (= St. 55). — Plankton-net, surface, 5 min., 1 cem.

Small Calanidae.

St. 57, 20. 7. 1912 (= St. 55). — Plankton-net, a few m. under the surface, 5 min., 1 cem.

Small Calanidae.

St. 58, 20. 7. 1912 (= St. 55). — Nansen-net, 340—290 m., 1 cem. Calanus finmarchicus, some spec.

— hyperboreus, 1

Euchaeta sp., 1; some small Calanidae; a few Sagitta.

St. 59, 22. 7. 1912. 60°35' N., 46°48' W. — Ringtrawl, 300 m. w., 20 min., 15 cem. (incl. 12 cem. Copepoda).

Hyas coarctatus, Zoea, 1	Decapod-larvae
Eupagurus pubescens, Zoea, 1	young Euphausidae
Parathemisto obliqua, 3	a Ctenophora
Calanus finmarchicus, 10 cem	Appendiculariae
some small Copepoda	

St. 60, 22. 7. 1912. 60°35' N., 45°46' W. — Ringtrawl, 500 m. w., 20 min., 500 cem. (425 cem. Copepoda, 75 cem. Hyperideae).

Euthemisto libellula, 5	Young Euphausid, 1
— bispinosa, 30	Thysanoessa inermis, 1
— compressa, 60	— longicaudata, 7
Parathemisto obliqua, 70 cem.	Calanus finmarchicus

St. 61, 22. 7. 1912. 66°35' N., 46°48' W. — 12.5—13 m. Laminariae. Stramin-dredge. Amphipoda alone 50 cem.

?Neotocrangon lar, juv., 1	Mysis oculata, abt. 10 (2 with
Spirontocaris Fabricii, ¼ liter (1	Dajus Mysidis)
with Sylon)	Amphilocheus manudens, 2
— turgida, abt. 10	Metopa longimana, 1
— polaris, abt. 10	— neglecta, 1
— groenlandica, 4	— Bruzelii, 1
	— carinata, 2

Syrrhoë crenulata, 1	Amathilla pinguis, abt. 15
Paroedicerus lynceus, 1	Ischyrocerus anguipes, several spec.
Monoculodes latimanus, 1	Dulichia spinosissima, abt. 10
Paramphithoë bicuspis, 12 ccm.	Caprella septentrionalis, 5
Acanthonotosoma serratum, abt. 10	Munna minuta, 1
Odius carinatus, 1	Phryxus abdominalis, 2 larvae
Pontogeneia inermis, 20 ccm.	Dajus Mysidis, 3, and 3 larvae
Amphithopsis megalops, 12	Herpyllobius arcticus, 1
Calliopius Rathkei, 1	Sylon Hippolytes, 1

St. 62, 22. 7. 1912. 60°41' N., 46°43' W. — 10—15 m. Clay with gravel and dead algae.

Spirontocaris Fabricii, 6 (1 with Sylon)	Amphithopsis megalops, 6
— turgida, 5	Amathilla pinguis, 2
Mysis oculata, 4	Ischyrocerus anguipes, a few spec.
Anonyx nugax, 4	Protomedeia fasciata, 1
Onisimus Edwardsii, abt. 30	Caprella septentrionalis, several spec.
Pontoporeia femorata, 5	Nebalia bipes, 5
Paroedicerus lynceus, abt. 15	Balanus balanoides (on the rocks at the water-line)
Monoculodes latimanus, 7	
Paramphithoë bicuspis, abt. 20	Centronotus fasciatus, 1
Pontogeneia inermis, 3	

St. 63, 23. 7. 1912. 60°38' N., 46°41' W. — Nansen-net; > 550 m.; Hydrography see further on (p. 363).

10—0 m., 0.5 ccm. Small Calanidae. — 25—10 m., 0.2 ccm. Detritus and some small Calanidae. — 50—25 m., 1 ccm. Small Calanidae. — 75—50 m., 1 ccm. Small Calanidae. — 100—75 m., 3 ccm. Calanus finmarchicus; a few Sagitta. — 125—100 m., 3 ccm. Parathemisto obliqua, 2; Calanus finmarchicus. — 150—125 m., 5 ccm. Parathemisto obliqua, 2; Calanus finmarchicus and some Sagitta. — 200—150 m., 3 ccm. Parathemisto obliqua, 2; Calanus finmarchicus 2.5 ccm.; some Sagitta. — 250—200 m., 2 ccm. Copepoda. Meganyctiphanes norvegica, 1; Thysanoessa Raschii, 1; Parathemisto obliqua, 5; Calanus finmarchicus (2 ccm.); a few Sagitta. — 350—250 m., 2 ccm. Parathemisto obliqua, 2; Calanus finmarchicus and some small Copepoda 1 ccm.; Conchoesia sp., 7; Sagitta, 1 spec., 6 cm. long. — 450—350 m., 3 ccm. Copepoda. Pasiphaë tarda, 1; Thysanoessa longicaudata, 1; Boreomysis arctica, 5; Parathemisto obliqua, 1; Calanus finmarchicus and a few C. hyperboreus, 3 ccm.; a few Tomopteris. — 550—450 m., 4 ccm. (incl. 3 ccm. Copepoda). Thysanoessa longicaudata, 2; Boreomysis arctica, 2; Calanus finmarchicus and a few C. hyperboreus and some very small Copepoda; some Tomopteris.

**St. 64**, 23. 7. 1912. 60°37' N., 46°43' W. — Ringtrawl, 600 m. w., 20 min., 150 cem. (incl. 100 cem. Copepoda + Sagitta).

*Meganyctiphanes norvegica*, 5  
*Thysanoessa inermis*, 2  
 — *longicaudata*, abt. 15  
*Euthemisto libellula*, 5  
 — *bispinosa*, 20  
 — *compressa*, 40

*Parathemisto obliqua*, 40 cem.  
*Apherusa glacialis*, 1  
*Calanus finmarchicus* and some  
 small *C. hyperboreus*

**St. 65**, 23. 7. 1912 (= St. 65). — Ringtrawl 500 m. w., 20 min.; 450 cem. (incl. 400 cem. Copepoda and Sagitta).

?*Nectocrangon* lar, juv., 1  
*Thysanoessa inermis*, 1  
 — *longicaudata*, 4  
*Euthemisto bispinosa*, 5

*Parathemisto obliqua*, 40 cem.  
*Calanus finmarchicus*, 95 % of the  
 Copepoda  
*Pseudocalanus elongatus*, 5 % of  
 the Copepoda

**St. 66**, 23. 7. 1912. 60°39' N., 46°44' W. — Dredge with straminet. 9—11 m. Laminariae. Amphipoda alone abt. 150 cem.

*Eupagurus pubescens*, Zoea, 1  
 ?*Nectocrangon* lar, juv., 2  
*Sclerocrangon boreas*, 4  
*Spirontocaris Fabricii*, 0.4 liter (1  
 with Sylon)  
 — *turgida*, abt. 15  
 — *polaris*, abt. 150 cem.  
 — *groenlandica*, 8  
*Mysis oculata*, abt. 20  
*Amphilocheus manudens*, 1  
*Metopa Bruzelii*, 2  
 — *carinata*, 2  
*Syrroë crenulata*, 3  
*Pleustes panoplus*, 3  
*Paramphithoë bicuspidata*, 50—60 cem.  
*Acanthonotosoma serratum*, abt. 15

*Pontogeneia inermis*, abt. 60 cem.  
*Amphithopsis megalops*, 4  
 ?*Calliopius laevisculus*, 7  
*Amathilla pinguis*, 5  
*Ischyrocerus anguipes*, several spec.  
*Dulichia spinosissima*, 8  
 — *tuberculata*, 5  
*Caprella septentrionalis*, several spec.  
*Munna minuta*, 2  
*Phryxus abdominalis*, 3 larvae  
*Bopyroides Hippolytes*, 7, on *Spiront. polaris*  
*Dajus Mysidis*, 2  
*Balanus crenatus*, 1  
*Sylon Hippolytes*, 1  
*Pycnogonid-larva*, 1

**St. 67**, 24. 7. 1912. 60°38' N., 46°36' W. — 220—310 m., 2.8°—?, salinity 34.0—34.5 ‰; stony clay. *Ctenodiscus crispatus*, 1.

**St. 68**, 24. 7. 1912. 60°38' N., 46°45' W. — 60—95 m., 0.5—0.2°, 32.7—33.1 ‰ salinity; stones.

*Asterias polaris*, 1  
*Henricia (Cribrella) sanguinolenta*, 2  
*Ctenodiscus crispatus*, 2

*Ophiopholis aculeata*, 1  
*Amphiura Sundevalli*, 1  
*Strongylocentrotus droebachiensis*, 2

St. 69, 24. 7. 1912. 60°37' N., 46°45' W. — 290—355 m.? — 3.7° salinity 34.3—34.8‰. Clay.

*Heliopecten glacialis*, 1  
*Ctenodiscus crispatus*, 1

*Primnoa resedaeformis*, several spec.

St. 70, 24. 7. 1912. 60°38' N., 46°45' W. — 225—290 m. Temp.? salinity 32.8—34.3‰. Stones and some clay.

*Chionoecetes Phalangium*, 1  
*Diastylis scorpioides*, 1

*Ctenodiscus crispatus*, more than  
hundred spec.

*Ophiura Sarsii*, 2

*Laetmogone violacea*, 1  
*Astrogonium Parelii*, 1

*Strongylocentrotus droebachiensis*, 1

St. 71, 25. 7. 1912. 60°41' N., 46°38' W. — Plankton-net, surface, 20 min., 0.2 cem. Detritus.

St. 72, 25. 7. 1912 (= St. 71). — Ringtrawl, 400 m. w., 20 min., 1 liter (incl. 800 cem. Copepoda).

NB. Half the content was thrown overboard; the figures given below but not above should therefore be multiplied by 2 in making quantitative comparison with the results from the other stations.

*Pontophilus norvegicus*, Zoea, 1  
*Thysanoessa inermis*, 1  
*Euthemisto libellula*, 35  
— *bispinosa*, 3

*Euthemisto compressa*, 33  
*Parathemisto obliqua*, 90 cem.  
*Calanus finmarchicus* (abt. 100 %  
of the Copepoda)

St. 73, 25. 7. 1912 (= St. 71). — Ringtrawl, 300 m. w., 20 min., 135 cem. (incl. 110 cem. Copepoda with a few *Sagitta*).

*Pontophilus norvegicus*, Zoea, 1  
*Euthemisto compressa*, 2  
*Parathemisto obliqua*, 25 cem.

*Calanus finmarchicus*, 95 % of the  
Copepoda  
*Calanus hyperboreus*, 5 % of the  
Copepoda

St. 74, 25. 7. 1912. 60°42' N., 46°38' W. — 90—200 m., 0.3—2.8°, salinity 33.2—34.1‰.

Stones, some clay. Dredge almost filled with stones, which had crushed a great part of the not very large quantity of animal content.

*Ctenodiscus crispatus*, 1

*Amphiura Sundevalli*, 1

St. 75, 25. 7. 1912. 60°44' N., 46°38' W. — 200—270 m., 3—3.2°. Salinity 34.1—34.2°. Stony clay.

*Ianira tricornis*, 1  
*Ctenodiscus crispatus*, 4

*Ophiura robusta*, 1  
*Amphiura Sundevalli*, 4



<i>Ophiacantha bidentata</i> , 5	<i>Icelus bicornis</i> , 1
<i>Psolus Phantapus</i> , 1	

St. 76, 25. 7. 1912. 60°44' N., 46°36' W. — 260—320 m., 3.0—3.3°. Stony clay.

<i>Spirontocaris Lilljeborgii</i> , 1	<i>Ctenodiscus crispatus</i> , 12
<i>Nymphon Stroemii gracilipes</i> , 1	<i>Amphiura Sundevalli</i> , 1

St. 77, 27. 7. 1912. 60°41' N., 46°33' W. — 245—470(?) m. Temp. 3.2°—? Stony clay.

NB. Judging from the dredge line, the great depth (470 m.) must be due to a hole in the bottom.

<i>Laetmogone violacea</i> , 1	<i>Ctenodiscus crispatus</i> , 4
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St. 78, 27. 7. 1912. 60°42' N., 46°29' W. — 30—50 m., 0.5°—0.5°.

Net torn, wherefore nature of bottom cannot be stated.

<i>Hyas coarctatus</i> , 5	<i>Acanthonotosoma serratum</i> , 1
<i>Socarnes VahlII</i> , abt. 10	
<i>Aristias tumidus</i> , 2	<i>Henricia (Cribrella) sanguinolenta</i> , 1
<i>Anonyx nugax</i> , 7	

St. 79, 27. 7. 1912. The same locality as St. 78. — Dredge of stramin. Bottom: shell-fragments.

<i>Hyas coarctatus</i> , several spec.	<i>Halirages fulvocinctus</i> , 1
<i>Spirontocaris Fabricii</i> , abt. 20 (1	<i>Rhachotropis aculeata</i> , 6
with <i>Sylon</i> )	—     inflata, 1
— <i>Lilljeborgii</i> , 4	<i>Ischyrocerus anguipes</i> , 2
— <i>turgida</i> , 7	<i>Dulichia spinosissima</i> , 5
— <i>polaris</i> , abt. 35	<i>Sylon Hippolytes</i> , 1
— <i>groenlandica</i> , 2	
<i>Pandalus borealis</i> , abt. 10	<i>Henricia (Cribrella) sanguinolenta</i> , 1
<i>Mysis mixta</i> , 1	<i>Ophiura (Ophioglypha) robusta</i> , 2
<i>Syrrhoë crenulata</i> , abt. 10	<i>Strongylocentrotus droebachiensis</i> , 5
<i>Monoculodes latimanus</i> , 2	
<i>Paramphithoë bicuspis</i> , 7	
<i>Acanthonotosoma serratum</i> , abt. 10	<i>Cyclopterus spinosus</i> , 1

St. 80, 30. 7. 1912. 60°46' N., 46°33' W. — 365 m., 3.7°. Fine clay with a few stones (glacial clay).

*Ctenodiscus crispatus*, 1

St. 81, 30. 7. 1912. 60°48' N., 46°32' W. — 110 m., 0.8°. Fine clay (glacial clay).

<i>Pandalus borealis</i> , 1	<i>Amphiura Sundevalli</i> , 1
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St. 82, 30. 7. 1912. 60°48' N., 46°33' W. — 80—90 m. Fine clay (glacial clay).

In the content was found none of the species to be dealt with in this paper.

St. 83, 31. 7. 1912. 60°45' N., 46°33' W. — Plankton-net, surface, 15 min., 0.5 cem.

Detritus and some small Calanidae.

St. 84, 31. 7. 1912 (= St. 83). — Ringtrawl, 200 m. w., 20 min., 10 cem. (almost only Copepoda).

Hyas coarctatus, Zoea, 2	Calanus finmarchicus, about 95 %
Euthemisto compressa, 1	of the Copepoda
	Some small Copepoda; a few Sagitta

St. 85, 31. 7. 1912. 60°45' N., 46°31' W. — Plankton-net, surface, 20 min., 3 cem.

Parathemisto obliqua, 1	Calanus finmarchicus (abt. 3 cem.)
Calliopius Rathkei, 1	a few small Copepoda

St. 86, 31. 7. 1912. (= St. 85). — Ringtrawl, 100 m. w., 20 min., 5 cem. (almost only Copepoda).

Hyas coarctatus, Zoea, 1	Calanus finmarchicus, 95 % of the
Pontophilus norvegicus, Zoea, 1	Copepoda
Young Euphausiidae	Some small Copepoda
Euthemisto compressa, 1	Cirripede-nauplii.

St. 87, 31. 7. 1912. 60°45' N., 46°26' W. — 230 m., 3°. Stony clay.

Spirontocaris Lilljeborgii, 1	Amphiura Sundevalli, 13
Halirages fulvocinctus, 1	Ophiacantha bidenticulata, 13
	Cucumaria calcigera, 1
Ctenodiscus crispatus, 11	Phyllophorus pellucidus, 1
Ophiura (Ophioglypha) Sarsii, 1	Psolus Fabricii, 1
— — robusta, 2	

St. 88, 31. 7. 1912. 60°45' N., 46°25' W. — 40—70 m.

Hyas coarctatus, abt. 10	Asterias polaris, 1
Spirontocaris Fabricii, 1	— Mülleri var. groenlandica,
Crypsidomus Terebellae, 1, on Ni-	1 with young
colea zostericola	Strongylocentrotus droebachiensis, 2
Pseudopallene circularis, 1	Psolus Fabricii, 1
	— phantapus, 1

**St. 89,** 31. 7. 1912. 60°45' N., 46°25' W. — 16—17-m. Laminariae.  
Dredge of stramin.

Amphipoda alone 160 ccm.

*Hyas coarctatus*, 1  
? *Nectocrangon* lar, juv., 1  
*Sclerocrangon boreas*, 1  
*Spirontocaris Fabricii*, 125 ccm.  
(1 with *Bopyroides*)  
*Spirontacoris turgida*, abt. 15  
— *polaris*, abt. 15  
— *groenlandica*, 2 (1  
with larva of *Phryxus* abdom.)  
*Mysis oculata*, abt. 10 (3 with  
*Dajus Mysidis*)  
*Anonyx nugax*, 4  
*Onisimus Edwardsii*, abt. 10  
*Metopa sinuata*, 1  
— *carinata*, 7  
? — — —, juv., 3  
*Syrrhoë crenulata*, 2  
*Monoculodes latimanus*, 9  
— *borealis*, 8  
*Paramphithoë bicuspis*, 20 ccm.

*Acanthonotosoma serratum*, 9  
*Odius carinatus*, 1  
*Pontogeneia inermis*, abt. 125 ccm.  
*Amphithopsis megalops*, several  
spec.  
*Halirages fulvocinctus*, 1  
? *Calliopius laeviusculus*, 6  
*Amathilla pinguis*, 13  
*Ischyrocerus anguipes*, several  
spec.  
*Dulichia tuberculata*, 1  
*Caprella septentrionalis*, several  
spec.  
*Munna minuta*, 2  
*Bopyroides Hippolytes*, 1  
*Phryxus abdominalis*, 1 larva, on  
*Spiront. groenlandica*  
*Dajus Mysidis*, 3  
*Balanus crenatus*, 1  
  
*Cottus scorpius*, 1

**St. 90,** 31. 7. 1912. 60°49' N., 46°36' W. — 100—110 m. Fine clay  
(glacial clay? though the station is not situated in an ice-fjord).

In the content was found none of the species to be dealt with in  
this paper.

**St. 91,** 1. 8. 1912. 60°48' N., 46°28' W. — 110—180 m., 0.5—2.1°.  
Stony clay.

*Spirontocaris polaris*, 2  
*Pandalus borealis*, 1  
*Nymphon longitarse*, 1

*Ctenodiscus crispatus*, 21  
*Ophiura* (*Ophioglypha*) *Sarsii*, 1  
*Amphiura Sundevalli*, 2  
*Ophiacantha bidentata*, 10

**St. 92,** 1. 8. 1912. 60°49' N., 46°27' W. — 50—90 m. Net torn.

*Hyas coarctatus*, 1  
*Spirontocaris Lilljeborgii*, 1

*Strongylocentrotus droebachiensis*,  
some spec.

**St. 93,** 2. 8. 1912. 60°51' N., 46°9' W. — 10 m. Black malodorous  
clay with decomposed weed.

*Caprella septentrionalis*, 1

*Nebalia bipes*, 2

St. 94, 3. 8. 1912. 60°51' N., 46°17' W. — Nansen-net.

10—0 m., 0.2 cem. Young Euphausidae, abt. 10. Small Calanidae and detritus. — 25—10 m., 0.2 cem. *Hyas coarctatus*, Zoea, 5. Detritus and a few small Calanidae. — 50—25 m., 0.2 cem. Young Euphausidae, abt. 10. Small Calanidae and detritus. — 75—50 m., 1 cem. *Euthemisto compressa*, 1. *Calanus finmarchicus*, 0.5 cem. Small Calanidae, 0.5 cem. — 100—75 m., 1 cem. Euphausidae, young, 3. *Parathemisto obliqua*, 3. *Calanus finmarchicus*. — 125—100 m., 1 cem. *Parathemisto obliqua*, 5. *Calanus finmarchicus*. — 150—125 m., 2 cem. *Parathemisto obliqua*, 4. *Calanus finmarch.* — 200—150 m., 1 cem. *Parathemisto obliqua*, 1. *Calanus finmarch.*, 0.5 cem. Small Calanidae, 0.5 cem. — 250—200 m., 1 cem. *Thysanoessa longicaudata*, 1. *Parathemisto obliqua*, 5. *Calanus finmarchicus* and other Copepoda. A few Sagitta. — 350—250 m. Copepoda 1 cem. *Thysanoessa longicaudata*, 1. *Boreomysis arctica*, abt. 10. *Parathemisto obliqua*, 2. *Calanus finmarch.* and some small Calanidae. *Conchoesia* sp., 1. — 450—350 m. Copepoda 3 cem. *Boreomysis arctica*, abt. 15. *Parathemisto obliqua*, 2. *Scina borealis*, 1. *Calanus finmarch.* with a few *C. hyperboreus* and *Euchaeta*. *Conchoesia* sp., 1. — 550—450 m. Copepoda 8 cem. *Boreomysis arctica*, 1. *Calanus finmarch.* with a few *C. hyperboreus*. *Conchoesia* sp., 1.

St. 95, 3. 8. 1912. 60°55' N., 46°23' W. — 115—155 m., 0.6°—1.6°. Stony clay.

*Ctenodiscus crispatus*, 6

*Ophiacantha bidentata*, 3

St. 96, 3. 8. 1912. 61°1' N., 46°21' W.

After two soundings with 550 m. w. had failed to touch bottom, a depth of 410 m. was found quite close in to land, temp. 3.6°. Fine clay (glacial clay) with a very few stones.

*Neohela monstrosa*, 2

St. 97, 4. 8. 1912. 60°49' N., 46°18' W. — 250—180 m., 3.0—3.2°. Stony clay.

*Spirontocaris polaris*, 1

*Diastylis Goodsirii*, 1

*Aega ventrosa*, 1

*Nymphon* sp., 1

*Heliometra glacialis*, 1

*Ctenodiscus crispatus*, 12

*Ophiura* (*Ophioglypha*) *robusta*, 1

St. 98, 4. 8. 1912. 60°48' N., 46°21' W. — 520—560 m., 3.6—3.9°. Fine clay with some stones.

*Boreomysis arctica*, 2

*Neohela monstrosa*, 1

*Ctenodiscus crispatus*, 4

St. 99, 5. 8. 1912. 60°53' N., 46°15' W. — Plankton-net, surface, 20 min., 0.5 cem. Almost nothing but detritus.

**St. 100,** 5. 8. 1912 (= St. 99). — Ringtrawl, 500 m. w., 20 min., 375 cem. (incl. 300 cem. Copepoda and Sagitta).

*Hyas coarctatus*, Zoea, 1

*Pontophilus norvegicus*, Zoea, 1

*Thysanoessa inermis*, 22

— *longicaudata*, abt. 15

*Euthemisto libellula*, 4

— *bispinosa*, 2

*Euthemisto compressa*, 12 cem.

*Parathemisto obliqua*, 30 cem.

*Calanus finmarch.* 90 % of the Cop.

— *hyperboreus* 5 % of the Cop.

*Pseudocalanus elongatus* 5 % of the Copep.

**St. 101,** 5. 8. 1912. 60°51' N., 46°18' W. — Plankton-net, surface, 20 min.

*Calanus finmarchicus*, 2

*Podon Leuckartii*, 1

**St. 102,** 5. 8. 1912. (= St. 101). — Ringtrawl, 400 m. w., 20 min., 450 cem. (incl. 325 cem. Copepoda + Sagitta).

*Hyas coarctatus*, Zoea, 1

Euphausid, young, 1

*Thysanoessa inermis*, 40

— *longicaudata*, 5

— *Raschii*, 5

*Euthemisto compressa*, 15

*Parathemisto obliqua*, 75 cem.

*Calanus finmarchicus* (100 % of the Copepoda)

Sagitta, several spec.

**St. 103,** 5. 8. 1912. 60°51' N., 46°25' W. — 90—100 m., 0.4°. Stones.

*Hyas coarctatus*, 5

*Scirontocaris polaris*, 1

*Stichaster albus*, 2

*Ophiocten sericeum*, 1

*Ophiopholis aculeata*, 1

*Amphiura Sundevalli*, 3

*Strongylocentrotus droebachiensis*, 2

*Centridermichtys uncinatus*, 1

**St. 104,** 5. 8. 1912. 60°50' N., 46°26' W. — 7—20 m. Laminariae. Fine dredge. Amphipoda alone 250 cem.

*Sclerocrangon boreas*, 8

*Nectocrangon* lar, 2

? — — juv., 4

*Spirontocaris Fabricii*, 100 cem.

— *turgida*, 10

— *polaris*, abt. 20 (1 with *Bopyroides*)

*Mysis mixta*, 1

*Anonyx nugax*, 7

*Onisimus Edwardsii*, several spec.

*Metopa carinata*, 6

*Syrrhoë crenulata*, 2

*Paroediceros lynceus*, abt. 15

*Monoculodes latimanus*, 11

— *borealis*, 5

*Paramphithoë bicuspis*, abt. 35 cem.

*Pontogeneia inermis*, 200 cem.

*Amphithopsis megalops*, several

? *Calliopius laeviusculus*, 8

*Ischyrocerus anguipes*, a few

*Caprella septentrionalis*, several

*Bopyroides Hippolytes*, 1 on *Spirontocaris polaris*

*Dajus Mysidis*, 2

*Asterias polaris*, 1

*Cottus scorpius*, juv., 1

*Liparis liparis*, 1

**St. 105,** 7. 8. 1912. 60°53' N., 46°13' W. — Plankton-net, surface, 20 min., 0.2 ccm. Almost nothing but detritus.

**St. 106,** 7. 8. 1912 (= St. 105). — Ringtrawl, 100 m. w., 20 min., 9 ccm. almost nothing but Copepoda (the half) and fragments of Ctenophora (the rest).

Hyas coarctatus, Zoea, abt. 10	Some small Copepoda
Young Euphausidae	Cirripede-nauplii and -cyprides
Some defective Hyperidae	
Euthemisto compressa, 1	Some fish-larvae
Calanus finmarchicus	

**St. 107,** 7. 8. 1912. (= St. 105) — Ringtrawl, 200 m. w., 20 min. No content.

**St. 108,** 7. 8. 1912 (= St. 105). — Ringtrawl, 300 m. w., 20 min.

In contrast to other hauls with similar length of wire, the content of this is remarkably large, 0.75 litre, of which abt. 100 ccm. Copepoda; almost the whole of the remainder being Sagitta. The net must thus have encountered a shoal of these.

Euthemisto libellula, 3	Calanus finmarchicus, 90 ccm.
— compressa, 4	— hyperboreus, 10 ccm.
Parathemisto obliqua, abt. 20 spec.	Sagitta, abt. 650 ccm.

**St. 109,** 7. 8. 1912. 60°51' N., 46°15' W. — 125—140 m., 1.1—1.5°. Stones and a little clay and shell-fragments.

Spirontocaris polaris, 2	Strongylocentrotus droebachiensis, 2
Rhachotropis aculeata, 1	Sebastes marinus, juv., 1
Ophiacantha bidentata, 2	Centridermichthys uncinatus, 1

(Bredefjord is continued St. 120—135.)

### Bredefjord Sermilik St. 110—119.

(See the map fig. 31.)

**St. 110,** 8. 8. 1912. 61°17' N., 45°39' W. — 55—90 m., 0.5—0.5°. Clay with stones.

Sclerocrangon boreas, 2	Stichaster albulus, 14
Spirontocaris polaris, 1	Ctenodiscus crispatus, 9
Nymphon longitarse, 1	Centridermichthys uncinatus, 2

**St. 111**, 8. 8. 1912. 61°16' N., 45°44' W. — 115 m., 0.4°. Clay with stones.

*Stichaster albulus*, 2  
*Amphiura Sundevalli*, 9

*Eunephthya fruticosa*, 3

**St. 112**, 8. 8. 1912. 61°15' N., 45°38' W. — 20—30 m., 0.5°—0.8°. Clay with stones.

*Stichaster albulus*, 2

*Pteraster militaris*, 1

**St. 113**, 9. 8. 1912. 61°19' N., 45°48' W. — > 565 m., 3.2°.

Deep sea lead failed to reach bottom with 565 m. w.; dredging therefore not attempted.

**St. 114**, 9. 8. 1912. 61°17' N., 45°47' W. — > 550 m., 3.3°.

Deep sea lead failed to touch bottom with 550 m. w.; dredging therefore not attempted.

**St. 115**, 9. 8. 1912. 61°17' N., 45°45' W. — 500 m., 3.2°. Stony glacial clay; dredge almost full.

*Boreomysis arctica*, 1

*Triglops Pingelii*, 1

**St. 116**, 9. 8. 1912. 61°13' N., 45°47' W. — 80—95 m., 1.7°—1.9°. Stony glacial clay.

NB. As showing the sharp declivity of the sea floor in this portion of the fjord it may be mentioned that a sounding made close outside this station showed 400 m. without touching bottom.

*Nymphon Stroemii gracilipes*, 1 | *Sebastes marinus*, juv. 1

**St. 117**, 10. 8. 1912. 61°05' N., 45°48' W. — 100—120 m., 1°—0.8°. Stones and a little clay.

*Ctenodiscus crispatus*, 3

**St. 118**, 10. 8. 1912. 61°05' N., 45°50' W. — Ringtrawl, 500 m. w., 20 min., 150 ccm. (incl. 100 ccm. Copepoda).

*Pontophilus norvegicus*, Zoea, 1

*Meganyctiphanes norvegicus*, 5

*Thysanoessa inermis*, 1

— *longicaudata*, 1

*Boreomysis arctica*, 1

*Mysis oculata*, 1

? *Pseudalibrotus Nanseni*, 5

*Euthemisto libellula*, abt. 20

— *compressa*, 2

*Parathemisto obliqua*, 50 ccm.

*Calanus finmarchicus*, 90 %

— *hyperboreus*, 5 %

*Pseudocalanus elongatus*, 5 %

St. 119, 10. 8. 1912 (= St. 118). — Ringtrawl, 400 m. w., 20 min., 175 cm. (incl. 100 cm. Copepoda).

Sabineia septemcarinata, young stage, 2	Euthemisto compressa, abt. 15
Meganyctiphanes norvegica, 25	Parathemisto obliqua, 50 cm.
Thysanoessa inermis, 5	? Pseudalibrotus Nanseni, 1
Mysis oculata, 1	Calanus finmarchicus, 90 %
Euthemisto libellula, abt. 20	— hyperboreus, 5 %
— bispinosa, 1	Pseudocalanus elongatus, 5 %

**Bredefjord** St. 120—135 (Continuation from St. 109).  
(See the map fig. 31.)

St. 120, 25. 8. 1912. 60°35' N., 46°47' W. — 750 m. Clay with some small stones.

Dredge out with 900 m. wire; a loop in the line 150 metres above the implement however, was found to have a long twisted worm tube (?) attached, so that the depth can hardly have been more than 750 m.

Amphiura denticulata, fragments	Molpadia oolitica, 1
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St. 121, 25. 8. 1910. 60°32' N., 46°51' W. — 700 m. Clay.

Caprella Rinkii, 1	Gorgonocephalus Lamarcki, 2
Chaetonymphon spinosum, 2	Ophiacantha anomala, 2
	Molpadia oolitica, 1
Heliometra glacialis, 3	
Hathrometra Sarsii, 1	Raia radiata, 1 egg-capsule
Ctenodiscus crispatus, 1	Eunephthya glomerata
Amphiura denticulata, 6	— florida
Ophiolebes claviger, 4	Stenogorgia borealis

St. 122, 25. 8. 1912. 60°32' N., 46°52' W. — Ringtrawl, 900 m. w., 20 min.

The net had here been working in the bottom, as was shown by the fact that it was torn in places, soiled with clay, and contained fragments of a Crinoid and Retepora (not preserved); beyond this, however, the content was lost, the cord on the bottom of the net having been torn off.

St. 123, 25. 8. 1912. 60°37' N., 46°47' W. — 5—10 m. Algae with some gravel. Fine dredge. Amphipoda alone 65—75 cm.

Sclerocrangon boreas, 1	Spirontocaris Fabricii, abt. 35
Nectocrangon lar, 2	— turgida, abt. 12



<i>Spirontocaris polaris</i> , 3	<i>Monoculodes latimanus</i> , several spec.
<i>Mysis oculata</i> , abt. 10	— <i>borealis</i> , 6
— <i>mixta</i> , 2	<i>Paramphithoë bicuspis</i> , 13 ccm.
<i>Diastylis Rathkei</i> , 1	<i>Pontogeneia inermis</i> , 50 ccm.
<i>Anonyx nugax</i> , 3	<i>Halirages bispinosus</i> , 3
<i>Onisimus Edwardsii</i> , 2	<i>Amphithopsis megalops</i> , several spec.
<i>Orchomenella minuta</i> , abt. 15	<i>Calliopius laeviusculus</i> , 1
<i>Pontoporeia femorata</i> , 1	<i>Amathilla pinguis</i> , 8
<i>Metopa carinata</i> , 5	<i>Ischyrocerus anguipes</i> , a few spec.
— — <i>juv.</i> , 3	<i>Caprella septentrionalis</i> , sever. spec.
<i>Syrrhoë crenulata</i> , 1	<i>Dajus Mysidis</i> , 1, and 2 larvae
<i>Paroedicerus lynceus</i> , several spec.	<i>Nebalia bipes</i> , 2

St. 124, 26. 8. 1912. 60°38' N., 46°42' W. — 700 m. Only clay.

St. 125, 26. 8. 1912. 60°37' N., 46°43' W., Plankton-net, surface, 20 min., 1 ccm. Almost nothing but detritus.

St. 126, 26. 8. 1912 (= St. 125). — Ringtrawl, 800 m. w., 20 min., 300 ccm. (incl. 75 ccm. *Boreomysis arctica* and 200 ccm. Copepoda).

<i>Pasiphaë tarda</i> , abt. 10, and 3 larvae	<i>Parathemisto oblivia</i> , 7 ccm.
<i>Hyas coarctatus</i> , Zoea, 1	<i>Pontogeneia inermis</i> , 1
<i>Pontophilus norvegicus</i> , Zoea, 3	<i>Apherusa glacialis</i> , 1
Young <i>Euphausidae</i> , 2	<i>Calanus finmarchicus</i> , 95 %
<i>Thysanoessa longicaudata</i> , abt. 50	— <i>hyperboreus</i> , a few spec.,
<i>Boreomysis arctica</i> , 75 ccm.	and other <i>Calanidae</i> , upon the
<i>Mysis mixta</i> , 2	whole 5 %
<i>Hyperia galba</i> , 1	<i>Tomopteris</i>
<i>Euthemisto compressa</i> , 12	<i>Sagitta</i>

St. 127, 26. 8. 1912. 60°38' N., 46°47' W. — 10—15 m. Gravel and a little clay. Fine dredge.

<i>Sclerocrangon boreas</i> , 1	<i>Ampelisca Eschrichtii</i> , 1
<i>Nectocrangon</i> lar, 4	— <i>macrocephala</i> , 6
<i>Spirontocaris Lilljeborgii</i> , 3	<i>Protomedeia fasciata</i> , 12
<i>Mysis oculata</i> , 4	<i>Philomedes brenda</i> , several spec.
<i>Diastylis Rathkei</i> , abt. 15	
— <i>scorpioides</i> , abt. 10	<i>Strongylocentrotus droebachiensis</i> , 3
<i>Anonyx nugax</i> , abt. 15	<i>Asterias Mülleri</i> var. <i>groenlandica</i> , 1
<i>Pontoporeia femorata</i> , 3	<i>Ctenodiscus crispatus</i> , 1
<i>Monoculodes latimanus</i> , 2	<i>Ophiura</i> ( <i>Ophioglypha</i> ) <i>robusta</i> , 1
— <i>borealis</i> , 5	<i>Amphiura Sundevalli</i> , several spec.
<i>Amphithopsis megalops</i> , 2	<i>Myriotrochus Rinkii</i> , 5
<i>Haploops tubicola</i> , 1, and 1 tube	<i>Eupyrus scaber</i> , 10

St. 128, 26. 8. 1912. 60°37' N., 46°45' W. — Ringtrawl, 700 m. w., 20 min., 175 ccm. (incl. 75 ccm. Copepoda).

Pandalus borealis, young stage, 1	Ethemisto libellula, 3
Thysanoessa inermis, 8	— bispinosa, 9
— longicaudata, abt. 10	— compressa, 40 ccm.
Parathemisto obliqua, 45 ccm.	Philomedes brenda, 7
	Calanus finmarchicus, 75 ccm.

St. 129, 26. 8. 1912. 60°32' N., 46°51' W. — Ringtrawl, 800 m. w., 20 min., 275 ccm. (incl. 150 ccm. Copepoda).

Pasiphaë tarda, 1	Mysis mixta, 6
Young Euphausidae, 1	Ethemisto libellula, 4
Meganyctiphanes norvegica, 3	— bispinosa, 8
Thysanoessa inermis, 8	— compressa, 30 ccm.
— longicaudata, 14 ccm.	Parathemisto obliqua, 60 ccm.
Boreomysis arctica, abt. 35	Calanus finmarchicus, 150 ccm.

St. 130, 28. 8. 1912.

St. 130A. 800 m. w. without bottom; dredge. 60°43' N., 46°35' W.

St. 130B. 900 m. w., dredge; clay. 60°44' N., 46°34' W.

Boreomysis arctica, 1	Ctenodiscus crispatus, 2
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St. 131, 28. 8. 1912. 60°47' N., 46°27' W. — Ringtrawl 800 m. w., 20 min., 300 ccm. (incl. 200 ccm. Copepoda).

Pandalus borealis, 1	Ethemisto bispinosa, 1
— — young stage, 1	— compressa, 1
Pasiphaë tarda, 6, and 1 young	Parathemisto obliqua, 45 ccm.
Young Euphausidae, 5	Scina borealis, 2
Meganyctiphanes norvegica, 3	Calanus finmarchicus, 95 % of the
Thysanoessa inermis, 11	Copepoda
— longicaudata, abt. 50	— hyperboreus } 5 % of
Boreomysis arctica, abt. 75 ccm.	Pseudocalanus elongatus } the Co-
Mysis mixta, 6	Euchaeta norvegica } pepoda
Diastylis Rathkei, 1	
Ethemisto libellula, 1	Scopelus glacialis, 1

St. 132, 28. 8. 1912. 60°48' N. 46°26' W. — Ringtrawl, 700 m. w., 20 min., 175 ccm. (incl. 100 ccm. Copepoda).

Pontophilus norvegicus, Zoea, 1	Mysis mixta, 2
Young Euphausid, 1	Hyperia medusarum, 1
Thysanoessa inermis, 18	Ethemisto libellula, abt. 15
— longicaudata, abt. 15	— bispinosa, 3

Euthemisto compressa, 8 ccm.	Calanus hyperboreus	} 5 % of the Co- pepoda
Parathemisto obliqua, 50 ccm.	Pseudocalanus elongatus	
Calanus finmarchicus, abt. 95 % of the Copepoda	Euchaeta norvegica	

**St. 133**, 28. 8. 1912. 60°49' N., 46°24' W. — Ringtrawl, 600 m. w., 20 min., 300 ccm. (incl. 150 ccm. Copepoda).

Meganyctiphanes norvegicus, 1	Parathemisto obliqua, 120 ccm.
Thysanoessa inermis, 27	Calanus finmarchicus, 90 % of the Copepoda
— longicaudata, abt. 15	Calanus hyperboreus, 5 %
Euthemisto libellula, 18	Pseudocalanus elongatus, 5 %
— bispinosa, 12	
— compressa, 25 ccm.	

**St. 134**, 29. 8. 1912. 60°54' N., 46°04' W. — 85—140 m., 0.1°—0.8°. Stones and a little clay.

Hyas coarctatus, 1	Amphiura Sundevalli, 1
Stegocephalus inflatus, 1	Ophiacantha bidentata, 3
	Strongylocentrotus droebachiensis, 6
Stichaster albulus, 8	
Ctenodiscus crispatus, 1	
Ophiopholis aculeata, 7	Eunephthya fruticosa, 1

**St. 135**, 29. 8. 1912. 60°51' N., 46°04' W. — 225—240 m., 0.8°. Stones with clay.

The dredge almost filled with *Ctenodiscus crispatus*.

Stichaster albulus, 1	Ophiacantha bidentata, 2
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### Skovfjord (St. 136—137, 143—156).

(See the map fig. 31).

**St. 136**, 30. 8. 1912 (the harbour of Narssak). 60°48' N., 45°57' W. — 6 m.

Black malodorous clay with fragments of decomposing algae.

Anonyx nugax, 2	Myriotrochus Rinkii, 1
Pontoporeia femorata, abt. 50	Chirodota laevis, several spec.
Nebalia bipes, 1	

**St. 137**, 1. 9. 1912. 60°45' N., 46°00' W. — Nansen-net.

10—0 m., 0.1 ccm. Detritus with small Calanidae. — 25—10 m., 0.2 ccm. Detritus with small Calanidae. — 50—25 m., 0.2 ccm. Small Calanidae, some detritus. — 75—50 m., 1 ccm. Small Calanidae, some

detritus. — 100—75 m., 0.1 ccm. Small Calanidae, some detritus. — 125—100 m., 2 ccm. Small Calanidae. — 150—125 m., 2 ccm. Small Calanidae. — 200—150 m., 5 ccm. Parathemisto obliqua, 1. Calanus finmarchicus and some small Calanidae and Sagitta. — 250—200 m., 10 ccm. Parathemisto obliqua, 7. Calanus finmarchicus and other Calanidae. — 280 (bottom)—250 m. This sample is lost.

(Skovfjord is continued St. 143—156).

### Tunugdliarfik (Eriksfjord) (St. 138—142).

(See the map fig. 31).

St. 138, 1. 9. 1912. 60°47' N., 45°55' W. — 300—360 m., 2.1°—2.1°. Bottom?

Ctenodiscus crispatus, 1		Ophiacantha bidentata, 2
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St. 139, 2. 9. 1912. 60°51' N., 45°49' W. — 280—300 m., 2.1°—2.1°. Clay without stones.

Asterias Mülleri var. groenlandica, 1		Ctenodiscus crispatus, several spec.
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St. 140, 2. 9. 1912. 60°49' N., 45°53' W. — 125—175 m., 0.8°—1.7°. Stones.

Ophiacantha bidentata, 1

St. 141, 2. 9. 1912. 60°47' N., 45°54' W. — 35—70 m., 1.2°—0.6°. Stones with Balanidae.

Hyas coarctatus, 1		Phoxichilidium femoratum, 1
Ischyrocerus anguipes, 1		

St. 142, 2. 9. 1912. 60°48' N., 45°55' W. — 14—18 m., Algae and gravel. Amphipoda alone 20 ccm.

Hyas coarctatus, 4		Paroediceros lynceus, abt. 15
Sclerocrangon boreas, 3		Monoculodes latimanus, sever. spec.
Spirontocaris Fabricii, abt. 50		— borealis, several spec.
(3 with Sylon)		Paramphithoë bicuspis, abt. 7 ccm.
— turgida, 7		Pontogeneia inermis, 5 ccm.
— polaris, several spec.		Amphithopsis megalops, abt. 10
Mysis oculata, abt. 20		Ischyrocerus anguipes, 2
— mixta, several spec.		Caprella septentrionalis, 1
Anonyx nugax, 1		Balanus crenatus, some spec.
?Orchomenella pinguis, 1		Sylon Hippolytes, 5
Syrrhoë crenulata, 9		

**Skovfjord** St. 143—156 (and St. 136—137).

(See the map fig. 31).

**St. 143**, 3. 9. 1912. 60°48' N., 46°06' W. — 65—90 m., 1.3°—0.8°. Clay with large stones.

Chionoecetes Phalangium, 1	Ctenodiscus crispatus, 6
Diastylis scorpioides, 1	Ophiopholis aculeata, 4
— Goodsirii, 1	Amphiura Sundevalli, 1
Haploops tubicola, 1	Ophiacantha bidentata, 17
Eunephthya fruticosa, 3	Strongylocentrotus droebachiensis, 2

**St. 144**, 3. 9. 1912. 60°43' N., 46°09' W. — 250—300 m., 2.1°. Stones with clay.

Nymphon Stroemii, 2	Ophiacantha bidentata, 2
	Strongylocentrotus droebachiensis, 1

**St. 145**, 5. 9. 1912. 60°39' N., 46°07' W. — 10—35 m., 2.1°. Stones and Laminariae. The dredge almost totally filled with Strongylocentrotus.

Hyas coarctatus, 1	Acanthonotosoma serratum, 1
Spirontocaris Fabricii, 2	Amphithopsis megalops, 2
— Lilljeborgii, 2	Dulichia spinosissima, 1
— turgida, 1	Nymphon longitarse, 1
Mysis mixta, 1	
Ianira tricornis, 2	Strongylocentrotus droebachiensis, many hundreds
Paramphithoë bicuspis, 3	

**St. 146**, 5. 9. 1912. 60°39' N., 46°08' W. — 305—310 m. Temp.? Clay with stones.

Ctenodiscus crispatus, 5

**St. 147**, 5. 9. 1912. 60°38' N., 46°10' W. — Plankton-net, surface, 15 min., 1 cm.

Hyas coarctatus, Zoea, 1	Detritus with small Calanidae
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**St. 148**, 5. 9. 1912 (= St. 147). — Ringtrawl, 300 m. w., 20 min. Some Ctenophora, but no Crustacea.

**St. 149**, 5. 9. 1912. 60°37' N., 46°12' W. — Ringtrawl, 200 m. w., 20 min. Some Ctenophora, but no Crustacea.

**St. 150**, 5. 9. 1912. 60°36' N., 46°13' W. — Ringtrawl, 100 m. w., 20 min. Some Ctenophora, but no Crustacea.

St. 151, 13. 9. 1912. 60°25' N., 46°30' W. — 58—60 m. Temp.?  
Stones with Balanidae.

Hyas coarctatus, 1	Balanus crenatus, some spec. on stones
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St. 152, 13. 9. 1912. 60°25' N., 46°28' W. — 80—120 m. 1.8°—1.9°.  
Stones with Balanidae.

The dredge must have been drawn over a ridge, as it contained a quantity of Laminariae.

Hyas coarctatus, abt. 15	Henricia (Cribrella) sanguinolenta, 1
Sabinea Sarsii, 1	Cucumaria frondosa, 2
Spirontocaris spinus, 1	Ophiopholis aculeata, 4
Pandalus borealis, 1	Strongylocentrotus droebachiensis, 1
Ianira tricornis, 1	

St. 153, 13. 9. 1912. 60°27' N., 46°25' W. — Some Ctenophora collected in the surface.

St. 154, 15. 9. 1912. 60°24' N., 46°36' W. — Nansen-net.

10—0 m., 0.1 ccm. Detritus and small Calanidae. — 25—10 m., 0.5 ccm. Detritus and small Calanidae. — 50—25 m., 0.5 ccm. Detritus and small Calanidae. — 75—50 m., 0.5 ccm. Detritus and small Calanidae. — 100—75 m., 0.5 ccm. Detritus and small Calanidae and Ctenophora. — 125—100 m., 0.75 ccm. Small Calanidae and Ctenophora. — 150—125 m., 1 ccm. Small Calanidae. Some Sagitta. Fragments of Ctenophora (?) — 200—150 m., 4 ccm. Young Euphausidae, 2. Calanus finmarchicus. Some Ctenophora. — 270 (bottom)—200 m., 7 ccm. Mysis mixta, 2. Euthemisto compressa, 3. Calanus finmarchicus.

St. 155, 15. 9. 1912. 60°25' N., 46°34' W. — 220 (240)—abt. 400 m., 2.6°—2.8°. Stones without clay.

The 400 m. due to a hole in the bottom; average depth far less than this.

Spirontocaris Lilljeborgii, 1	Ctenodiscus crispatus, 1
Pandalus borealis, 2	Ophiura (Ophioglypha) Sarsii, several spec.
Halirages fulvocinctus, 1	Ophiopholis aculeata, 10
Nymphon Stroemii, 1	Ophiacantha bidentata, 19
Stichaster albulus, 3	Strongylocentrotus droebachiensis, 1
Pedicellaster typicus, 1	

St. 156, 15. 9. 1912. 60°27' N., 46°28' W. — 70—140 m.? — 2.3°.	
Hyas coarctatus, abt. 15	Spirontocaris polaris, 2
Eupagurus pubescens, 2	— groenlandica, 1

Socarnes VahlII, 4	Ampelisca Eschrichtii, 1
Anonyx nugax, 1	Henricia (Cribrella) sanguinolenta, 1
Paramphithoë Boeckii, 3	Ophiura (Ophioglypha) robusta, 1
— bicuspis, 1	Ophiopholis aculeata, 3
Rhachotropis aculeata, 1	Ophiacantha bidentata, sever. spec.

## 2. Fresh-water stations.

(See the map fig. 31.)

Lake Nr. 1 = Small lake up in the inner part of Tasiusak, Bredefjord Sermilik, abt. 61°13' N., 45°37' W.

Lake Nr. 2 = Small lake close inside St. 123, Bredefjord, abt. 60°37' N., 46°48' W.

Lake Nr. 3 = Some small pools above the old Norse ruins at Akuliaritsok, Bredefjord, abt. 60°52' N., 46°30' W.

Lake Nr. 4 = Small pool above Narssak, Skovfjord, abt. 60°48' N., 45°57' W.

	Lake Nr. 1	Lake Nr. 2	Lake Nr. 3	Lake Nr. 4
<i>Latona glacialis</i> .....	×	×	×	×
<i>Daphnia pulex</i> .....	×	?	..	..
<i>Ceriodaphnia quadrangula</i> .....	×	×	×	..
<i>Scapholeberis mucronata</i> .....	×	..	×	×
<i>Bosmina obtusirostris</i> .....	×	..	×	..
<i>Acroperus leucocephalus</i> .....	..	×	..	×
<i>Lyneus affinis</i> .....	×	×	..	..
<i>Eurycerus lamellatus</i> .....	×	×	×	×
<i>Polyphemus pediculus</i> .....	×	×	×	×
<i>Chydorus sphaericus</i> .....	×	×	×	×
<i>Cyclops strenuus</i> .....	×	..	..	..
— <i>viridis</i> .....	..	×	..	..
<i>Diaptomus minutus</i> .....	×	×	×	..
— <i>castor</i> .....	..	..	..	×

## DISTRIBUTION OF THE SPECIES.

### 1. Bottom Organisms.

(Crustacea, Pycnogonida, Echinodermata.)

As in the Danmark Expedition, I have taken 200 m. as the limit between the littoral zone and the deeper portions. The littoral zone is further divided into an algae belt (0—35 m.) and a non-algal (35—200 m.).





	Kvane fjord			Bredefjord			Sermilik			Skovtjorden			Tunugdliarfik		
	< 35 m.	35—200 m.	> 200 m.	< 35 m.	35—200 m.	> 200 m.	< 35 m.	35—200 m.	> 200 m.	< 35 m.	35—200 m.	> 200 m.	< 35 m.	35—200 m.	> 200 m.
<i>Metopa carinata</i> .....	..	..	..	x											
<i>Syrrhoë crenulata</i> .....	x	..	..	x x	..	..	..	..	..	..	..	..	x		
<i>Paroediceros lynceus</i> .....	..	..	..	x x	..	..	..	..	..	..	..	..	x		
<i>Monoculodes latimanus</i> ..	..	..	..	x x	..	..	..	..	..	..	..	..	x		
— <i>borealis</i> .....	..	..	..	x	x	..	..	..	..	..	..	..	x		
<i>Pleustes panoplus</i> .....	x	..	..	x											
<i>Paramphithoë Boeckii</i> .....	..	..	..	..	..	..	..	..	..	..	x	..			
— <i>bicuspis</i> .....	..	..	..	x x	..	..	..	..	..	x	x	..	x		
— <i>assimilis</i> .....	x	..	..	..	x	..						..			
<i>Parapleustes glaber</i> .....	..	..	..	..	x	..						..			
<i>Acanthonotosoma serr.</i> ..	..	..	..	x x	x	..									
<i>Odius carinatus</i> .....	..	..	..	x	..	..	..	..	..	x					
<i>Pontogeneia inermis</i> .....	..	..	..	x x	..	..	..	..	..	..	..	..	x		
<i>Amphithopsis megalops</i> ..	..	..	..	x	..	..	..	..	..	x	..	..	x		
<i>Halirages fulvocinctus</i> ..	..	..	..	x	x	x	..	..	..	..	..	x			
— <i>bispinosus</i> .....	..	..	..	x											
<i>Calliopius laevis</i> .....	..	..	..	x											
— <i>Rathkei</i> .....	..	..	..	x											
<i>Rhachotropis aculeata</i> ...	..	x	..	x	x	..	..	..	..	..	x				
— <i>inilata</i> .....	..	..	..	x											
<i>Gammarus locusta</i> .....	x	..	..	x	..	..	x								
<i>Amathilla pinguis</i> .....	..	..	..	x											
<i>Ampelisca Eschrichtii</i> ...	..	x	..	x	..	..	..	..	..	..	..	x			
— <i>macroceph.</i> .....	..	..	..	x											
<i>Haploops tubicola</i> .....	..	..	..	x	..	..	..	..	..	..	x				
<i>Protomedea fasciata</i> .....	..	..	..	x											
<i>Ischyrocerus anguipes</i> ...	x	..	..	x x	x	..	..	..	..	..	..	..	x	x	
<i>Dulichia spinosiss.</i> .....	..	..	..	x x	x	x	..	..	..	x					
— <i>tuberc.</i> .....	..	..	..	x											
<i>Neohela monstrosa</i> .....	..	..	..	..	..	x									
<i>Aeginella spinosa</i> .....	..	..	x												
<i>Caprella septentr.</i> .....	x	..	..	x x	x	..	..	..	..	..	..	..	x		
— <i>Rinkii</i> .....	..	..	..	..	..	x									
<i>Calathura brachiata</i> .....	..	..	..	..	..	x									
<i>Aega ventrosa</i> .....	..	..	..	..	..	x									
<i>Ianira maculosa</i> .....	..	..	..	..	..	x									
— <i>tricornis</i> .....	..	..	..	..	..	x	..	..	..	x	x				
<i>Munna minuta</i> .....	..	..	..	x											
<i>Eurycope producta</i> .....	..	..	..	..	..	x									

[illegible]

	Kvanefjord			Bredefjord			Sermilik			Skovfjord			Tunugdliarfik		
	< 35 m.	35— 200 m.	> 200 m.	< 35 m.	35— 200 m.	> 200 m.	< 35 m.	35— 200 m.	> 200 m.	< 35 m.	35— 200 m.	> 200 m.	< 35 m.	35— 200 m.	> 200 m.
<i>Astrogonium Parelii</i> .....	..	..	..	..	..	x x	..	..	..	..	..	..	..	..	x
<i>Ctenodiscus crispatus</i> .....	..	..	x x	x	x	x x	..	x	..	..	x	x	..	..	x
<i>Ophiura Sarsii</i> .....	..	x	x	..	..	x	..	..	..	..	..	x	..	..	..
— <i>robusta</i> .....	..	..	..	..	x	x	..	..	..	..	x	..	..	..	..
<i>Ophiecten sericeum</i> .....	..	..	..	..	x	..	..	..	..	..	..	..	..	..	..
<i>Ophiopholis aculeata</i> .....	..	..	..	x	x x	x	..	..	..	..	x	x	..	..	..
<i>Amphiura Sundevalli</i> .....	..	..	..	x	x	x x	..	x	..	..	x	..	..	..	..
— <i>denticulata</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Ophiacantha bidentata</i> ..	..	x	x	..	x	x x	..	..	..	..	x	x	..	x	x
— <i>anomala</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Ophioscolex glacialis</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Ophiolebes claviger</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Gorgonoceph. Lamarekii</i> ..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Strongylocentr. droebach.</i>	x	x	..	x	x x	x	..	..	..	x x	x	x	..	x	..
<i>Myriotrochus Rinkii</i> .....	..	..	..	x	..	..	..	..	..	x	..	..	..	..	..
<i>Chirodota laevis</i> .....	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..
<i>Eupyrus scaber</i> .....	..	..	..	x	..	..	..	..	..	..	..	..	..	..	..
<i>Molpadia oolitica</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Laetmogone violacea</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Cucumaria frondosa</i> .....	..	..	..	x	x	..	..	..	..	..	..	..	..	..	..
— <i>calcigera</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Phyllophorus pellucidus</i> ..	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..
<i>Psolus Fabricii</i> .....	..	..	..	..	x	x	..	..	..	..	..	..	..	..	..
— <i>phantapus</i> .....	..	..	..	..	x	x	..	..	..	..	..	..	..	..	..
— <i>valvatus</i> .....	..	..	..	..	..	x	..	..	..	..	..	..	..	..	..

As will be seen from the foregoing list, by far the greatest yield was obtained from the Bredefjord, which appears to be due not only to the fact that most of the dredgings were made in this fjord, but also to its being the richest water. Only a few of the forms found there penetrate up into Sermilik. Very much the same may be said of Skovfjord as compared with Tunugdliarfik, thus distinctly indicating that the fauna grows poorer from the mouth of the fjords inward. Kvanefjord is seen to be far poorer than Bredefjord, and this despite the fact that the mouth only of this latter was investigated, which one would suppose to be the richest portion of the fjord.

With regard to vertical distribution, and comparison between the different fjords, the list speaks for itself; some few features should, however, be pointed out. The results are based chiefly on the material

from Bredefjord, as the best investigated water. For their zoogeographical importance *vide infra* (p. 366).

In the algae belt, (0—35 m.) the character forms were:

Hyas coarctatus	Monoculodes latimanus
Sclerocrangon boreas	Paramphithoë bicuspis
Spirontocaris polaris	Acanthonotosoma serratum
— Fabricii	Pontogeneia inermis
— turgida	Ischyrocerus anguipes
Mysis oculata	Dulichia spinosissima
— mixta	Caprella septentrionalis
Anonyx nugax	Dajus Mysidis
Onisimus Edwardsii	Balanus crenatus
Syrrhoë crenulata	Sylon Hippolytes
Paroedicerus lynceus	Strongylocentrotus droebachiensis.

Of these again, however, some few species are seen to predominate over the rest *viz*; (No. 3) Hyas coarctatus, (No. 12) Spirontocaris Fabricii, (No. 16) Sp. turgida, (No. 17) Sp. polaris, but more especially (No. 63) Paramphithoë bicuspis, and (No. 68) Pontogeneia inermis.

In H. J. HANSEN, V. Grønlands Malakostraka 1887, the collections of several species present remarkable resemblance to some of the "Rink" stations, especially St. 61 (12.5—13 m.) even though the depths do not agree. Thus HOLBØLL has, from "Godthaab, deep water (abt. 40—60 fath.); on Sertularia, with Metopa species" sent home the following species which are of interest in this connection: Amphilochus manudens, Metopa clypeata, M. borealis(?), M. longimana, M. Bruzelii, M. neglecta, M. longicornis, and Odius carinatus.

In closed bays with decomposing weed, Nebalia bipes (No. 101) may almost be reckoned as a character form; in Julianehaab harbour over 550 specimens were taken at one time.

Strongylocentrotus droebachiensis (No. 166) may be noted as a character form also for deep water (as far down as about 400 m.) for the most part on rocky bottom. It would seem to be extremely common everywhere; in several places (though not in the area investigated, where the depth was generally too great) I have seen it in clear water at about 10 m. depth, covering the bottom so thickly that the animals lay close up to one another; this we were frequently able to observe from the boat while under way for over five minutes at a time without a break. This applies, moreover, not merely to the fjord near the old Norse church, Kakortok, but also to several places between Ivigtut and Bredefjord.

At depths from 35—200 m. only a very few species occur in great numbers; the only ones which can be said to do so are Ctenodiscus crispatus, Amphiuira Sundevalli, and Ophiacantha bidentata, but none of the bottom forms of Crustacea or Pycnogonida.

Among the deeper stations, one in particular should be mentioned, *viz*; St. 55, (mouth of Bredefjord; 60°34' N., 46°45' W. 310—330 m. clay bottom with some small stones and large red corals). As shown in the station list p. 329, this station includes 22 species belonging to the groups dealt with in the present work. Of these, a single one, (No. 150) *Pteraster hastatus* was new to science, and the following 6 new for Greenland, *viz*; (No. 97) *Eurycope robusta*, (No. 127) *Scalpellum Stroemii*, (No. 142) *Hathrometra Sarsii*, (No. 152) *Poraniomorpha hispida*, (No. 177) *Psolus valvatus*, and (No. 181) *Primnoa resedaeformis*. This station alone has thus augmented the fauna of Greenland with 7 species. Other species also, moreover, are interesting; (No. 91) *Calathura brachiata*, (No. 94) *Ianira maculosa*, (No. 122) *Saccopsis Terebellidis*, (No. 164) *Ophioscolex glacialis* had not previously been found south of the ridge across Davis Strait (abt. 66° N.) while (No. 160) *Amphiura denticulata* had hitherto only been found at 64—64½° N. and very much the same applies to (No. 162) *Ophiacantha anomala*. Again, (No. 163) *Ophiolebes claviger*, was formerly only known from W. Greenland, locality not stated. Of the 22 species, therefore, all save 8 represent finds of some particular interest.

At depths beyond 100 m. the bottom was as a rule stony, in some few cases also with shell gravel, and at some places with much clay, *viz*:

Bredefjord St. 34 (?), 460—> 550 m.; St. 44, 165—190 m.; St. 45, 430—450 m.; St. 49, 490 m.; St. 55, 310—330 m.; St. 67, 220—310 m.; St. 69, 290—355 m.; St. 75, 200—270 m.; St. 76, 260—320 m.; St. 80, 365 m.; St. 81, 110 m.; St. 82, 80—90 m.; St. 87, 230 m.; St. 90, 100—110 m.; St. 91, 110—180 m.; St. 95, 115—155 m.; St. 96, 410 m.; St. 97, 250—280 m.; St. 98, 520—560 m.; and Sermilik St. 115, 500 m.; St. 116, 80—95 m.; with Bredefjord St. 121, 700 m.; St. 124, 700 m.; St. 130, < 900 m.; and St. 135, 225—240 m.

Such of these stations where the depth amounted to only abt. 100 m. or even less (St. 81, 82, 116, and probably also St. 90) are doubtless affected in this respect by their proximity to the inland ice, the bottom being evidently formed by glacier clay; in the branch fjord where the island of Nuk is situated, (abt. 46°35' W.) the water, even at a distance of a couple of nautical miles from the ice, was so clayey that one could not see so much as a single millimetre down. It is evident that this glacier clay has everywhere stifled practically all animal life; at St. 81—82, the dredge contained hardly anything but a quantity of tube worms with long, thin tubes. Dr. V. NORDMANN has, by the way, noticed exactly similar conditions in Northern Strømfjord, where the glacier clay marks a limit of animal life; only few species can exist in the bottomless clay or in water which must be altogether impregnated therewith.

The following list shows the stations arranged in order of depth:

Kvanefjord. St. 2, 17—19 m.; St. 10, 19.5—54 (?) m.; St. 9, 22—24 m.; St. 4, 20.5—34 m.; St. 13, 34—40 m.; St. 6, 37—45 m.; St. 1,

84 m.; St. 25, 115 m.; St. 3, 210—225 m.; St. 11, 290—320 m.; St. 23, 200—410 m.; St. 12, 290—400 m.; St. 5, 420 m.

Bredefjord. St. 123, 5—10 m.; St. 104, 7—20 m.; St. 93, 10 m.; St. 66, 9—11 m.; St. 62, 10—15 m.; St. 127, 10—15 m.; St. 61, 12.5—13 m.; St. 89, 16—17 m.; St. 37, 20—30 m.; St. 46, 20—30 m.; St. 32, 35—37 m.; St. 36, 29 (—100 m. ?); St. 78, 30—50 m.; St. 79, 30—50 m.; St. 88, 40—70 m.; St. 92, 50—90 m.; St. 68, 60—95 m.; St. 103, 90—100 m.; St. 134, 85—140 m.; St. 74, 90—200 m.; St. 81, 110 m.; St. 95, 115—155 m.; St. 91, 110—180 m.; St. 33, 100—220 m.; St. 109, 125—140 m.; St. 44, 165—190 m.; St. 40, 170—180 m.; St. 75, 200—270 m.; St. 135, 225—240 m.; St. 87, 230 m.; St. 70, 225—290 m.; St. 97, 250—280 m.; St. 67, 220—310 m.; St. 53, 260 m.; St. 76, 260—320 m.; St. 77, 245 (—470 m. ?); St. 69, 290—355 m.; St. 55, 310—330 m.; St. 80, 365 m.; \*St. 96, 410 m.; St. 45, 430—450 m.; St. 34, 460—550 m.; St. 49, 490 m.; St. 98, 520—560 m.; St. 121, 700 m.; St. 120, 900 m. w.; depth ca. 750 m.; St. 130, 900 m. w., ca. 750 m.

Bredefjord Sermilik. St. 112, 20—30 m.; St. 110, 55—90 m.; St. 116, 80—95 m.; St. 117, 100—120 m.; St. 111, 115 m.; St. 115, 500 m.

Skovfjord. St. 136, 6 m.; St. 145, 10—35 m.; St. 151, 58—60 m.; St. 143, 65—90 m.; St. 152, 80—120 m.; St. 156, 70—140 m.; St. 155, 220 (240)—ca. 400 m.; St. 144, 250—300 m.; St. 146, 305—310 m.

Tunugdliarfik (Eriksfjord). St. 142, 14—18 m.; St. 141, 35—70 m.; St. 140, 125—175 m.; St. 139, 280—300 m.; St. 138, 300—360 m.

The slight number of hauls made at only a few metres depth is due to the fact that the irregular contour of the bottom in the shallows rendered navigation dangerous, as there was always the risk of running the motor boat upon a rock. And it may doubtless safely be said that this feature is largely responsible for the fact that the shallower portions of the Greenland coastal waters have been so little investigated.

The depths about 300 m. also frequently involved considerable difficulty, the dredge often getting hung up here, which is probably due to rough rocky bottom, or possibly large stones. At St. 38, we had to cut away the dredge with 350 m. of line, to escape being run down ourselves by an iceberg.

## 2. Plankton.

In addition to the plankton-net, which was used in several places at the surface, NANSEN's closing net and the ringtrawl were also employed, working together, and also in conjunction with the water bottle and reversing thermometer; for hydrographical features, *vide infra* (p. 362).

In order to determine at what depth the ringtrawl actually fished with a certain length of line, the Nansen-net was called into play at about the same places, and a comparison of the hauls made showed the

actual depth fished to be = about half the length of wire out. The diameter of the Nansen-net was 50 cm., that of the ringtrawl 1 m.

In the Kvanefjord, the Nansen-net was only used once, as was also the ringtrawl; we dared not have them out oftener, owing to the quantities of fjord ice about.

In Bredefjord, the Nansen-net was used at the mouth (St. 30), in the central portion (St. 63) and at the base of the fjord (St. 94).

By way of comparison with St. 30 (at the mouth of the fjord) the following ringtrawl hauls were made:

St. 50, 100 m. w.; St. 51, 200 m. w.; St. 52 and 59, 300 m. w.; St. 35, 400 m. w.; St. 48 and 60, 500 m. w.; St. 47, 600 m. w.; St. 31, 700 m. w.; St. 129, 800 m. w.; St. 122, 900 m. w.

For comparison with St. 63 (the central portion of the fjord) the following hauls were made with the ringtrawl:

St. 86, 100 m. w.; St. 84, 200 m. w.; St. 73, 300 m. w.; St. 72, 400 m. w.; St. 65, 500 m. w.; St. 64, 600 m. w.; St. 128, 700 m. w.; St. 126, 800 m. w.

And for comparison with the work of the Nansen-net at the base of the fjord, (St. 94) the ringtrawl was called into play as follows:

St. 106, 100 m. w.; St. 107, 200 m. w.; St. 108, 300 m. w.; St. 102, 400 m. w.; St. 100, 500 m. w.; St. 133, 600 m. w.; St. 132, 700 m. w.; St. 131, 800 m. w.

In Bredefjord Sermilik the Nansen-net was not used at all, and the ringtrawl only twice, with 400 m. w. (St. 119) and 500 m. w. (St. 118).

In Skovfjord, the Nansen-net was used at St. 137 (the extreme innermost portion) and at St. 154 (at the mouth); the ringtrawl however, was only used 3 times (St. 148—150, with 300, 200 and 100 m. w.).

In Tunugdliarfik (Eriksfjord) no plankton work was done.

With regard to the method of dealing with the contents of the ring trawl, *vide supra* p. 236.

In the list of ringtrawl hauls given below, the number of individuals of each species has been calculated from a sample drawn from the whole; i. e. where one-tenth of the total yield from one station was examined, the resultant figures were multiplied by ten, giving the figure shown in the list.

### Plankton character forms.

#### 1. Ringtrawl.

In order to render the figures for all stations comparable one with another, all have been reckoned as for the same duration of haul, *viz.* 20 min. excl. paying out and hauling in.

The percentage for the two *Calanus* species denotes their ratio of each to each, not to the total yield including other Crustacea.

	Wire	Total content	Meganyctiphanes norvegica	Thysanoessa inermis	Th. longicaudata	Th. Raschii	Boreomysis arctica	Euthemisto libellula	Euth. compressa	Euth. bispinosa	Parathemisto oblivia	Hyperiidea in the whole	Calanus finmarchicus	C. hyperboreus	Copepoda in the whole
St. 50 (Bredefjord the month) ..	m.w. 100	cm <sup>3</sup> 3	spec. ..	spec. ..	spec. ..	spec. ..	spec. ..	spec. ..	spec. ..	spec. ..	cm <sup>3</sup> ..	cm <sup>3</sup> ..	% 100	% ..	cm <sup>3</sup> 2
St. 86 (Bredefjord, central part)	—	5	..	..	..	..	..	..	1	..	..	..	95	..	5
St. 106 (Bredefjord, the head) ..	—	9	..	..	..	..	..	..	1	..	..	..	95	..	4
St. 51 (Bredefjord, the month) ..	200	1)	..	..	..	..	..	..	1	..	..	..	..	..	..
St. 84 (Bredefjord, central part)	—	10	..	..	..	..	..	..	..	..	..	..	95	..	10
St. 107 (Bredefjord, the head) ..	—	0	..	..	..	..	..	..	..	..	..	..	..	..	..
St. 52 (Bredefjord, the month) ..	300	0	..	..	..	..	..	..	..	..	..	..	..	..	..
St. 59 (Bredefjord, the month) ..	—	15	..	..	..	..	..	..	..	..	3	3	80	..	12
St. 73 (Bredefjord, central part)	—	135	..	..	..	..	..	..	2	..	25	25	95	5	110
St. 108 (Bredefjord, the head) ..	—	750	..	..	..	..	..	3	4	..	20	27 spec.	90	10	>100
St. 35 (Bredefjord, the month) ..	400	75	..	2	2	..	..	25	30	20	..	25	95	..	55
St. 72 (Bredefjord, central part)	—	1000	..	8	..	..	..	75	60	6	175	200	100	..	800
St. 102 (Bredefjord, the head) ..	—	450	..	5	1	1	..	20	15	75	75	150	100	..	325
St. 119 (Sermilk) .....	—	175	25	5	..	..	..	5	1	15	50	55	100	10	100
St. 60 (Bredefjord, the month) ..	500	500	..	1	7	..	..	60	60	30	70	75	95	..	425
St. 65 (Bredefjord, central part)	—	450	..	1	4	..	..	..	5	5	40	50	..	..	400
St. 100 (Bredefjord, the head) ..	—	375	..	22	15	..	..	4	12 cm <sup>3</sup>	2	50	45	90	5	300
St. 118 (Sermilk) .....	—	150	5	1	1	..	1	20	2	..	50	50	90	..	100
St. 47 (Bredefjord, the month) ..	600	250	..	2	4	..	..	60	15 cm <sup>3</sup>	50	100	125	..	..	125
St. 64 (Bredefjord, central part)	—	150	5	2	15	..	..	5	20	40	40	45	<100	5	<100
St. 133 (Bredefjord, the head) ..	—	300	1	27	15	..	..	18	25 cm <sup>3</sup>	12	120	150	90	..	150
St. 31 (Bredefjord, the month) ..	700	100	..	1	16	1	..	25	10 cm <sup>3</sup>	12	20	35	99	..	65
St. 138 (Bredefjord, the month) ..	—	175	..	8	10	..	..	3	40	9	45	100	100	..	75
St. 132 (Bredefjord, central part)	—	175	..	18	15	..	..	15	8 cm <sup>3</sup>	3	50	60	95	<5	100
St. 129 (Bredefjord, the month) ..	800	275	3	8	14 cm <sup>3</sup>	..	35	4	30 cm <sup>3</sup>	8	60	100	100	<5	150
St. 126 (Bredefjord, central part)	—	200	..	..	50	..	75 cm <sup>3</sup>	..	12	7	7	10	95	<5	100
St. 131 (Bredefjord, the head) ..	—	300	3	11	50	..	75 cm <sup>3</sup>	1	..	1	45	45	95	<5	200

1) Ctenophora, Melusae.

The three ringtrawl hauls made in Skovfjord (St. 148—150, with 300, 200 and 100 m.w.) yielded some few Ctenophora, but strangely enough no Crustacea.



### Remarks on the Plankton fauna.

1. Bredefjord. The surface plankton, (St. 29, 39, 41, 42, 43, 56, 57, 71, 83, 85, 99, 101, 105, 125), consisted mainly of small Calanidae (chiefly *Pseudocalanus elongatus*); there was also, however, a considerable quantity of detritus, Euphausida larvae and Zoeæ of *Hyas coarctatus*. At St. 85, a single specimen of *Parathemisto obliqua* was taken. At St. 101 a specimen of *Podon Leuckartii* G. O. Sars, was found; this being new for Greenland. The quantity varies considerably.

Nansen's closing-net (St. 30, the mouth) St. 63, (central part) St. 94 (the head). In the upper water layers, from 0—125 m. the quantity decreases in a marked degree from the mouth inwards, and the fauna of these strata is the same as that taken with the surface plankton net. Below this depth, where the temperature increases owing to the subjacent Atlantic water, we find *Calanus finmarchicus*, Euphausidae and Hyperiidea, the quantity of the yield increasing from the mouth inwards; *vide* especially 550—450 m. In these deep layers, 550—350 m. (we had unfortunately only 550 m. of wire for the Nansen-net, and were thus unable to reach farther down) we found, most unexpectedly, *Boreomysis arctica* as a constant component; at St. 94, it was even taken as high up as 350—250 m. Another remarkable find was that of *Scina borealis*, St. 94, at 450—350 m., this species being new for Greenland. In the deep layers also, some specimens of *Conchoesia* sp. were found, and, apart from Crustacea, Tomopteris and Sagitta were of fairly frequent occurrence.

The ring trawl yielded, strange to say, nothing at all from St. 107 (200 m. w.) and St. 52 (300 m. w.), while at St. 51 (200 m. w.) it brought up a Ctenophora and a Medusa, nothing more. The yield was extremely variable; greatest with 300—500 m. w. and extremely poor with 100 m. w. which is doubtless due to the fact that the small Calanidae found near the surface (*vide* remarks on the Nansen-net) passed through the mesh.

On comparing the results from Bredefjord for plankton-net, Nansen-net and ringtrawl, it will be seen that the poor surface plankton goes down to abt. 100—125 m. Beyond this depth ( $> 33\text{‰}$  salinity) where the temperature increases, we find the Euphausidae and Hyperiidea, while among the Copepoda, *Calanus finmarchicus* appears as a character form, amounting to 80—100% of all Copepoda. Euphausidae did not appear at any of the stations in such quantity as to predominate over the others; the greater portion is still made up of Hyperiidea and Copepoda, there being as a rule at least twice as many of the latter as of the former (reckoned in ccm.); St. 108 (300 m. w.) is remarkable as yielding over 500 ccm. Sagitta.

Of Euphausidae, *Thyanoessa longicaudata* and *Th. inermis* were the most numerous (maximum at 500—800 m. w.); also *Meganyctiphanes norvegica* however, must here be reckoned as a character form, albeit

	Kvanefjord	Bredefjord	
	St. 26—27 (the mouth)	St. 30 (the mouth)	St. 63 (central part)
10—0 m.	(25—0 m.) 1.5 cem. Cirripede-cyprides (and some young Euphausidae) 35 % small Calanidae 65 %	5 cem. almost only small Calanidae some Euphausidae (young) and Cirripede-cyprides	0.5 cem. small Calanidae
25—10 m.	vide supra	3 cem. small Calanidae; a few young Euphausidae and Vermes	0.2 cem. detritus and some small Calanidae
50—25 m.	2 cem. Hyas coarctatus, Zoea, 15. small Calanidae, some young Euphausidae and Cirripede-cyprides	2 cem. Content = 25—10 m., but with some Appendiculariae	1 cem. small Calanidae
75—50 m.	1 cem. small Calanidae; a few young Euphausidae and Cirripede-nauplii and -cyprides, some Sagitta	1 cem. Content = 50—25 m., with Hyas coarctatus, Zoea, 1	1 cem. small Calanidae
100—75 m.	3 cem. almost nothing but small Calanidae; some Cirripede-nauplii and -cyprides	1 cem. small Calanidae with a few Calanus finmarchicus	3 cem. Calanus finmarchicus, a few Sagitta
125—100 m.	4 cem. Content = 100—75 m. ?Parathemisto obliqua, 1	1 cem. Calanus finmarch.	3 cem. Parathemisto obliqua, 2 Calanus finmarchicus
150—125 m.	5 cem. almost nothing but small Calanidae; a few Calanus finmarch. some Cirripede-nauplii	3 cem. Calanus finmarchicus; a few Calanus hyperboreus	5 cem. Parathemisto obliqua, 2 Calanus finmarchicus; some Sagitta
200—150 m.	1 cem. Thysanoessa inermis, 1 Calanus finmarchicus; some small Calanidae; some Sagitta	15 cem. Calanus finmarch.	3 cem. Parathemisto obliqua, 2 Calanus finmarchicus; some Sagitta
250—200 m.	2 cem. Euthemisto libell., 1 Calanus finmarchicus; some small Calanidae	1.5 cem. Euthemisto compr., 1 Calanus finmarchicus	2 cem. Meganyct. norveg., 1 Thysanoessa Raschii, 1 Parathemisto obliqua, 1 Calanus finmarchicus; a few Sagitta

closing-net.

Skovfjord		
St. 94 (the head)	St. 137 (the head)	St. 154 (the mouth)
0.2 ccm. small Calanidae and detritus young Euphausidae, 10 spec.	0.1 ccm. small Calanidae and detritus	0.1 ccm. small Calanidae and detritus
0.2 ccm. detritus and small Calanidae Hyas coarctatus, Zoea, 5	0.2 ccm. Content = 10—0 m.	0.5 ccm. Content = 10—0 m.
0.2 ccm. Content = 10—0 m.	0.2 ccm. Content = 10—0 m.	0.5 ccm. Content = 10—0 m.
1 ccm. Euthemisto compressa, 1 Calanus finmarchicus, 0.5 ccm. small Calanidae, 0.5 ccm.	1 ccm. Content = 10—0 m.	0.5 ccm. Content = 10—0 m.
1 ccm. young Euphausidae, 3 Parathemisto obliqua, 3 Calanus finmarchicus	0.1 ccm. Content = 10—0 m.	0.5 ccm. small Calanidae, detritus and Ctenophora
1 ccm. Parathemisto obliqua, 5 Calanus finmarchicus	2 ccm. small Calanidae	0.75 ccm. small Calanidae and Ctenophora
2 ccm. Parathemisto obliqua, 4 Calanus finmarchicus	2 ccm. small Calanidae	1 ccm. young Euphausidae, 2 small Calanidae and defective Ctenophora(?); a few Sagitta
1 ccm. Parathemisto obliqua, 1 Calanus finmarchicus, 0.5 ccm. small Calanidae, 0.5 ccm.	5 ccm. Parathemisto obliqua, 1 Calanus finmarch. and some small Calanidae Sagitta	4 ccm. young Euphausidae, 2 Calanus finmarch.; some Cteno- phora
1 ccm. Thysanoessa longicauda, 1 Parathemisto obliqua, 5 Calanus finmarch.; some small Calanidae; a few Sagitta	10 ccm. Parathemisto obliqua, 7 Calanus finmarch.; some small Calanidae	[270 m. (bottom) —200 m.] 7 ccm. Mysis mixta, 2 Euthemisto compr., 3 Calanus finmarch.

	Kvanefjord	Bredefjord	
	St. 26—27 (the mouth)	St. 30 (the mouth)	St. 63 (central part)
350— 250 m.	[300—250 m.] 1.5 cm. young Euphausidae Calanus finmarch. 0.75 cm. — hyperb., a few small Copepoda Cirripede-nauplii and (many) Cyprides Sagitta Ctenophora	1 cm. Euthemisto compr., 1 Parathemisto obliv., 2 Calanus finmarchicus small Calanidae (among others Pseudocal. elong.) Sagitta Tomopteris	1 cm. Parathemisto obliv., 2 Calanus finmarchicus; some small Calanidae Conchoesia sp., 7; 1 great Sa- gitta (1 cm., 6 cm.)
450— 350 m.		1 cm. young Euphausidae Boreomysis arct., 1 Calanus finmarch.; some other (the greater part small) Calanidae Tomopteris	3 cm. Pasiphae tarda, 1 Thysanoessa longic., 1 Boreomysis arctica, 5 Parathemisto obliv., 1 Calanus finmarchicus — hyperb., a few To- mopteris
550— 450 m.		2 cm. Parathemisto oblivia, 6 Apherusa glacialis, 2 Calanus finmarchicus — hyperb., a few; some small Calanidae Conchoesia sp., 2	4 cm. Thysanoessa longic., 2 Boreomysis arct., 2 Calanus finmarchicus — hyperb., a few; some small Calanidae; some To- mopteris

occurring in lesser quantity. As regards Mysidae, the finding of *Boreomysis arctica* in the inner portion of Bredefjord, at great depths (700—800 m. w., 250—550 m.) was altogether unexpected. This species is thus a true character form in the deep warm water, and furnishes additional proof of the fact that the Atlantic water penetrates right up to the base of the fjord.

Among Hyperiidea, *Parathemisto oblivia* is by far the most numerous, frequently amounting to 80 % of all Hyperiidea; *Euthemisto compressa*, also, with *E. hispinosa*, were fairly numerous, especially at 500—800 m. w. On the other hand, *E. libellula*, was least numerous, which, in the case of an arctic species, was only to be expected; it is found however, right down to 800 m. w.

Among the Copepoda, *Pseudocalanus elongatus* appears as a character form for the arctic surface water, making up the greater portion of what I have noted in the list as small Calanidae. Beyond abt. 100—125 m. however, *Calanus finmarchicus* is the character form, although

Skovfjord		
St. 94 (the head)	St. 137 (the head)	St. 154 (the mouth)
1 cm. Thysanoessa longic., 1 Boreomysis arctica, 10 Parathemisto obliqua, 2 Calanus finmarch.; some small Calanidae Conchoesia sp., 1	[280 m. (bottom) —250 m.] this sample is lost	see above
3 cm. Boreomysis arctica, 15 Parathemisto obliqua, 2 Scina borealis, 1 Calanus finmarch. with a few C. hyperb. and Euchaeta Conchoesia sp., 3		
8 cm. Boreomysis arctica, 1 Calanus finmarch. — hyperb., a few Conchoesia sp., 1		

Cal. hyperboreus often represented abt. 5% of the Copepoda at these depths, besides other species found in lesser quantity.

2. Bredefjord Sermilik. The two ringtrawl hauls (St. 118—119, 400 and 500 m. w.) revealed the same fauna as in Bredefjord itself, but less numerously represented.

3. Skovfjord and 4. Tunugdliarfik (Eriksfjord). The ringtrawl hauls in Skovfjord brought up only Ctenophora, strangely enough no Crustacea. The yield of the Nansen-net was similar to that in Bredefjord, but poorer; Hyperiidea were almost entirely wanting.

In Tunugdliarfik no plankton was collected.

5. Kvanefjord. The surface hauls (St. 15, 19, 20, 21) were of about the same content as in Bredefjord, with the addition of Cirrepede cyprides. A single Amphipod (Calliopius Rathkei?) was also taken.

As to the haul with the Nansen-net (St. 26—27) nothing to remark.

The only ringtrawl haul made here (St. 28) cannot be compared with the hauls in Bredefjord, as much of the material must have been lost; as mentioned above (p. 236) we did not here employ the same method of dealing with the content as at the other stations.

## HYDROGRAPHY.

Investigation of the physical conditions was made by measurement of temperature and salinity. Dr. J. NIELSEN, Hydrographer to the "Tjalfe" expedition, and Dr. J. P. JACOBSEN have here assisted me in various ways, for which I beg to proffer my best thanks. I have also to thank Prof. MARTIN KNUDSEN for kindly lending me the areometers from the "Ingolf" expedition.

The salinity was measured by areometer; the figures for this however, make no claim to absolute accuracy, as it was very difficult to take a correct reading owing to the vibration of the motor boat. We were unfortunately unable to measure the salinity during the second half of the expedition, as our water bottle was broken at St. 76, and it was found impossible to get it repaired at the machine shops in Ivigtut.

Both temperature and salinity were noted at all dredgings (up to St. 75, of course) we had also intended to measure the salinity and temperature at the same places and depths where the Nansen-net was employed; i. e. at the mouth, in the central portion, and at the base, of each fjord. In the Kvanefjord, we were prevented by ice from going even half way up the fjord, so that no measurements are available for the inner portion; while as regards Bredefjord, the accident to our water bottle precluded the measuring of salinity in the inner portion, and the same applies to Bredefjord Sermilik, to Skovfjord, and Tunugdliarfik.

The results will be seen from the accompanying tables; as already mentioned, however, the figures for salinity can hardly be strictly accurate. For purposes of comparison with the measurements made at the same places where the Nansen-net was used, the results of the dredgings are arranged for each fjord according to depth. (Unfortunately we had only 600 metres of line for the thermometer and water bottle, so that it was impossible to measure at greater depth). The comparison of these figures will naturally not give any absolutely reliable result, as the manner in which the stations were spread over the whole of the fjord is here disregarded; the figures should however, serve to give some sort of an idea as to the condition from the surface downward.

### 1. The Atlantic Fjords.

Bredefjord and Sermilik. (for depths etc. *vide* p. 233, 353). The surface temperature is here very variable, but is at any rate fairly high; salinity likewise variable, but at 10 m. depth it is still only abt. 30 ‰.

Bredefjord						
depth	The mouth			Central part		The head
	"Tjalfe" 21-7-1909	"Rink" St. 30 15-7-1912		"Rink" St. 63 23-7-1912		temp.
	temp.	temp.	salinity	temp.	salinity	
m.			$\frac{0}{100}$		$\frac{0}{100}$	
0	3.87°	6.75°	27.0	5.5°	24.9	
10	0.80°	3.00°	31.2	0.6°	27.2	
25	0.10°	0.5°	32.2	0.5°	31.7	
50	0.38°	0.1°	32.7	0.3°	32.7	85 m.: 0.1° (St. 134)
75	0.30°	0	32.9	0.2°	32.9	100 m.: 0.4° (St. 103)
100	0.19°	0	33.1	0.1°	33.1	110 m.: 0.5° (St. 91)
125	—	0.5°	33.2	0.9°	33.6	115 m.: 0.6° (St. 95)
150	0.94°	1.0°	33.6	1.8°	33.9	140 m.: 0.8° (St. 134)
200	3.13°	2.7°	34.0	2.8°	34.3	155 m.: 1.6° (St. 95)
250	..	3.0°	34.4	3.0°	34.4	180 m.: 2.1° (St. 91)
350	3.57°	3.4°	34.5	?	34.7	240 m.: 0.8° (St. 135)
450	..	3.8°	35.2	3.7°	34.7	250 m.: 3.0° (St. 97)
500	3.73°	..	..	..	..	280 m.: 3.2° (St. 97)
550	..	3.8°	35.2	?	34.6?	520 m.: 3.6° (St. 98)
650	3.77°	..	..	..	..	560 m.: 3.9° (St. 98)

Sermilik	Skovfjord	Tunugdliarfik
temp.	temp.	temp.
.....	10 m.: 2.1° (St. 145)	
20 m.: 0.5° (St. 112)		
30 m.: 0.8° (St. 112)	65 m.: 1.3° (St. 143)	35 m.: 1.2° (St. 141)
80 m.: 1.7° (St. 116)	80 m.: 1.8° (St. 152)	70 m.: 0.6° (St. 141)
95 m.: 1.9° (St. 116)	90 m.: 0.8° (St. 143)	
100 m.: 1.0° (St. 117)		
115 m.: 0.4° (St. 111)		
120 m.: 0.8° (St. 117)	120 m.: 1.9° (St. 152)	125 m.: 0.8° (St. 140)
.....	140 m.: 2.3° (St. 156)	175 m.: 1.7° (St. 140)
.....	220 (240) m.: 2.6° (St. 155)	280 m.: 2.1° (St. 139)
.....	300 m.: 2.1° (St. 144)	300 m.: 2.1° (St. 139)
.....	400 m.: 2.8° (St. 155)	300 m.: 2.1° (St. 138)
550 m.: 3.3° (St. 114)	.....	360 m.: 2.1° (St. 138)
565 m.: 3.2° (St. 113)		

This is a natural result of the many glaciers. At 25 m. depth, the temperature was 0.5°, falling thereafter to 0° at abt. 100 m., and rising again towards the bottom, so that at 150 m. we have abt. 1.0°, at 250 m. abt. 3°, and at 350 m. abt. 3.5°, beyond which the increase is only very slight (650 m.: 3.77°).

The salinity likewise increases downwards. In the central portion of the fjord, the salinity at 10 m. depth is less (27.2‰) than at the mouth

## Kvanefjord.

depth	The mouth (St. 24)		Central part (St. 17)		Other stations			
	temp.	salinity	temp.	salinity	station	depth	temp.	salinity
m.		‰		‰		m.		‰
0	2.3°	27.3	2.9°	25.6	St. 2	17—19	..	31.0—31.6
10	2.0°	29.6	2.3°	26.9	St. 10	19.5	1.5°	31.8
25	1.6°	31.5	..	..	St. 4	20.5	1.5°	31.5
28	..	..	1.4°	31.8	St. 9	22	2° (?)	32.2
50	0.85°	32.5	0.9°	32.4	St. 9	24	1°	32.1
75	0.80°	32.7	..	..	St. 4	34	2.0° (?)	32.2
80	..	..	0.6°	32.7	[St. 13	34	1°	32.1]
90	..	..	0.2°	?	St. 6	37	0.7°	31.8
100	0.0°	32.9	÷ 0.5°	..	[St. 13	40	1°	32.1]
125	÷ 1.25°	33.0	..	..	St. 6	45	0.5°	31.1
130	..	..	÷ 0.8°	33.3	St. 10	54	0.8°	32.1
150	÷ 0.2°	33.3	÷ 0.8°	33.3	St. 1	84	?	32.5
162	..	..	+ 1.0°	..	[St. 25	115	0°	?] ]
175	1.0°	33.6	..	..	St. 8	140	0.2°	33.0
180	..	..	(1.5° ?)	..	St. 23	200	1.6°	33.7
200	1.5°	..	1.2°	33.7	St. 3	210	?	33.6
250	1.9°	..	2.0°	33.8	St. 7	210	1.0°	33.3
260	..	..	(1.2° ?)	..	St. 3	225	3.0°	33.8
300	2.2°	33.9	(1.2° ?)	33.8	St. 7	230	2.0°	33.3
350	2.7°	..	(1.5° ?)	34.0	St. 11	290	2.65°	34.0
380	2.7°	34.1	..	..	St. 12	290	0.7°	?
400	..	..	1.2°	33.9	St. 14	330	2.8°	34.1
440	..	..	0.2°	33.8	St. 12	400	?	33.3
					St. 23	410	3°	?
					St. 5	420	3°	34.1
					St. 16	440	2°	33.7
					St. 22	470	3°	33.8
					St. 14	500	3°	33.7

(31.2 ‰) which is due to the water from the glaciers. At 25 m. depth, we have abt. 32 ‰, 100 m. abt. 33 ‰, 200 m. abt. 34 ‰, after which the increase is only very slight (550 m.; 35.2 ‰). In the central portion of the fjord, the warm layers go somewhat farther up than at the mouth. The warm Atlantic water penetrates almost right up to the glacier at the base of the Sermilik (St. 113, 565 m. 3.2°). The low temperature (0.8°) at 250 m. (St. 135) I am unable to explain.

Skovfjord and Tunugdliarfik (for depths etc. *vide* p. 233, 354). The conditions here were not so well investigated as in Bredefjord; it is evident however, that the Atlantic water has access at least to some degree, although the bottom temperature is not as high as in Bredefjord.

Kvanefjord, (for depths etc. *vide* p. 234). At 10 m. depth, the salinity at the mouth was 29.6 ‰, as against only 26.9 ‰ in the central portion, which is due to the many icebergs. From 1.6° at 25 m. depth, the temperature decreases, down to abt. 125 m. where it was ÷ 1.25°;



**Northern Strømfjord** (see the map Meddel. om Grøn. vol. 51, 1913, p. 57).

station	depth	temp.	salinity	station	depth	temp.	salinity
	m.		‰		m.		‰
?	0	6°	..	St. 1	41	÷ 0.5°	
St. 2	0—2	3.5°	..	St. 4 B	46—48	÷ 0.7°	
St. 10B	5	5°	31.9	St. 23	50—52	+0.1°—+0.2°	32.3
St. 24	6	1°	..	St. 7	51—54	..	32.2
St. 34	8	1°	..	St. 17	56	0°	33.3
St. 8	12	4°	..	St. 10A	58	..	32.5
St. 3 B	14	0.3°	..	St. 11C	65—98	÷ 0.7°	33.3
St. 29	16	1.5—1.2°	32.7	St. 27	77	÷ 1.2°	
St. 24	18	0.5°	..	St. 33	45—100	÷ 1.0°	
St. 19	20	5°	33.5	St. 33	150	÷ 1.1°	34.3
St. 32	20	0.7°	..	St. 36A	170—200	..	33.5
St. 1, 34	21	0.5°	..	St. 3	190—250	0° (?)	
St. 36B	21—24	2°	..	St. 35	210—225	÷ 1.2°	35.1
St. 28	28—36	0.8°	32.3	St. 18	225—240	÷ 1.5°	33.3
St. 8	29	1.4°		St. 4	250—300	ca. 0°	
St. 32	35	0.2°	..	St. 21B	325	÷ 1.0°	
St. 31	35—41	1°	..	St. 3 A	325—330	÷ 0.1°	33.3
St. 3 B	38	0.2°	..	St. 11D	360—380	÷ 1.5°	
St. 14	40—45	0.2—0°	32.2	St. 4 A	400—410	÷ 0.7°	

after this, it increases downwards, 0° being probably about 150 m. (the water is naturally also at 0° some distance higher up, *viz*; at abt. 100 m.); at 250 m. the temperature is abt. 2°; at 380, at the mouth, 2.7°, while in the central portion, at 400—440 m. it is only 1.2°—2.0°, although 3° was recorded at several places from 225—500 m. This fjord is thus less Atlantic in character than Bredefjord.

The salinity increases gradually downwards; 25 m.; 31.5 ‰, 50 m.; 32.5 ‰, 125 m.; 33.0 ‰, 175 m.; 33.6 ‰, 380 m.; 34.1 ‰; i. e. the salinity also less than in Bredefjord.

## 2. An Arctic Fjord. Northern Strømfjord.

By way of comparison, we may take the figures for Northern Strømfjord, as shown in Dr. NORDMANN's Journal. Unfortunately, the method of taking hydrographical observations at certain places from surface to bottom, as in the southern fjords, was not followed here; the measurements distinctly show, however, that the fjord is arctic in character. The temperature falls, by greatly varying degrees, to 0° at 50 m. and thence to ÷ 1.5° at 225—240 m. and 360—380 m. Not all the measurements of temperature are probably correct, but it is at least certain that the temperature is negative everywhere at all depths below 60 m. or thereabout. The salinity increases downwards; 5 m.; abt. 32 ‰; at 50 m. it appears to be abt. 32.2—33.3 ‰; the highest figure for salinity was noted at St. 35; 210—225 m.; 35.1 ‰.

## ZOOGEOGRAPHY.

As stated in the Introduction (p. 231) the object of the expedition was to show that the fauna in the deeper portion of the fjords investigated was Atlantic, and not arctic in character, and as will be seen from the following, this has been fully proved to be the case.

The method of arrangement is as follows; first all fjords together, with I, bottom organisms and II, Plankton; then each fjord taken separately, so as to determine the character of each.

For the sake of convenience, I have followed the same order as in the zoogeographical section of my work on the Danmark expedition, to which I may refer. For the Echinodermata, reference may be made to Dr. TH. MORTENSEN's works in the "Danmark" Expedition (Meddel. om Grønland vol. 45) and on Grønlands Echinodermata (Conspectus Faunae Groenlandicae, *ibid.* vol. 23).

### I. Bottom Fauna.

#### 1. Arctic Deep-water species ( $> 200$ m.).

(K. STEPHENSEN, Danmark-Exp., p. 565; K. St., Conspectus p. 417 — TH. MORTENSEN, Danmark-Exp., p. 291; Th. M., Conspectus, p. 313).

#### 1 A. Species endemic in the cold Polar deep of W. Greenland.

(N. of abt.  $66^{\circ}$  N.).

(K. St., Danmark-Exp., p. 566, 577; K. St., Conspectus, p. 417).

TH. MORTENSEN, in the Danmark Exped. (p. 292—93) expresses the opinion that this area is not arctic, but Atlantic, which is entirely in opposition to the testimony of the Malacostracan fauna, even though some few Atlantic species may be found. The southern portion of this polar deep (abt.  $66^{\circ}$  — abt.  $71^{\circ}$  N.) should doubtless be regarded mainly as a mixed region. Its arctic character has quite recently been distinctly demonstrated by AD. S. JENSEN, from the distribution of *Raia hyperborea* (AD. S. JENSEN; The Selachians of Greenland, *Mindeskrift for Japetus Steenstrup*, 1913, No. XXX, p. 37—39, Chart p. 38).

#### 1 B. Species from the cold area of the Polar Ocean (N. of abt. $66^{\circ}$ N.).

(K. St., Danm.-Exped., p. 567; Conspectus p. 417).

#### 1 C. Species common to Areas 1 A and 1 B.

K. St., Danm.-Exped., p. 570; Conspectus, p. 418).

In TH. MORTENSEN's work quoted above, 12 species of Echinodermata are recorded from the great arctic deep of E. Greenland, the western portion not included (in the Conspectus only 8 species).

To these must be added the following Echinodermata:

*Lophaster furcifer* (Th. Mortensen, Conspectus, p. 355).

*Hathrometra prolixa* (*ibid.* p. 372).

The first-named species is not mentioned in the Danmark-Exped. the second, however, is in the passage quoted ascribed to the littoral

fauna, whereas judging from the depths given, it would seem rather to belong to the arctic deep.

None of these Echinodermata are included in the material from the "Rink".

Of Crustacea and Pycnogonida, none belonging to Groups 1 A and 1 B were found; of those belonging to Group 1 C, we have *Stegocephalus inflatus*, *Neohela monstrosa*, *Aeginella spinosa*, and *Calathura brachiata*. None of these, however, are truly arctic forms, as none of them are restricted to purely arctic conditions; the three first are found far to the south along the coast of Norway, (the two first into the Skagerak or even the Kattegat) while the last is even known from the Bay of Biscay.

## 2. The Atlantic (boreal) Deep-sea fauna (> 200 m.).

(K. St., Danmark-Exp., p. 577; Conspectus p. 418. — Th. Mortensen, Danmark-Exp., p. 292; Conspectus p. 313).

Of Malacostraca and Pycnogonida 70 species are mentioned l. c. Of these, grown specimens of the following were taken by the "Rink"<sup>1)</sup>.

× *Munidopsis curvirostra*

*Spirontocaris Lilljeborgii*

*Pandalus borealis*, with the larvæ of

× *Munida Bamffica* (? , new to Greenland)

× *Pontophilus norvegicus*

× *Pandalus propinquus*, and the following spp. new to Greenland

*Caprella Rinkii* (n. sp.)

*Eurycope producta*

*Scalpellum Stroemii*, besides

? *Saccopsis Terebellidis*.

Of Echinoderms, TH. MORTENSEN mentions in all 31 species, to which must be added the following six:

*Molpadia Blakei* var. *groenlandica*

*Pteraster hastatus*

*Ophiozona tjalfiana*

*Ophiotjalfa vivipara*

*Amphiura denticulata*

*Ophiomyx serpentaria*.

Of these 37 Echinodermata the following are found in the "Rink" material:

× *Molpadia oölitica*

× *Psolus valvatus*

× *Laetmogone violacea*

× *Astrogonium Parelii*

× *Poraniomorpha hispida*

× *Pedicellaster typicus*

*Pteraster hastatus*

× *Ophiacantha anomala*

<sup>1)</sup> × indicates that the species should be reckoned not merely as properly belonging to this zoogeographical group, but also as a true type form.

× <i>Ophiolebes claviger</i>	× <i>Gorgonocephalus Lamarekii</i>
× <i>Amphiura denticulata</i>	× <i>Hathrometra Sarsii</i>

Disregarding *Saccopsis terebellidis*, which is not determined with certainty, and which is not included in the zoogeographical survey of the Danmark Expedition, we arrive at the result that of the 70 + 3 Malacostraca (*Scalpellum Stroemii*, which is included, although belonging to the Entomostraca) and Pycnogonida, the "Rink" has taken 9 species, i. e. abt. 12% of the Atlantic deep sea forms, while of the 37 Atlantic Echinodermata, no less than 12 are found, or abt. 31%.

One could hardly wish for better proof as to the Atlantic character of the waters investigated, especially when it is borne in mind that the "Rink" material was drawn from a very restricted area, and collected within the space of three months, whereas the lists previously published by Dr. TH. MORTENSEN and the present writer in the "Danmark" exped. and in the Conspectus include all earlier collections from the whole of Greenland, some of which were made at considerable distance from the coast.

In addition to the 22 species above mentioned, the following were taken by the "Rink" at depths beyond 200 m. viz:

*Neohela monstrosa* (lives both at negative and positive temp.)

*Aega ventrosa* (mainly boreal and mainly a deep sea species)

*Ianira maculosa* (mainly boreal, both deep and shallow water)

*Pycnogonum littorale* (mainly boreal, both deep and shallow water)

*Nymphon macrum* (mainly boreal, both deep and shallow water)

——— *Stroemii* (both boreal and arctic, both deep and shallow water)

*Chaetonymphon hirtipes* (both boreal and arctic, depth as a rule < 150 m.)

*Helioметра glacialis* (mainly arctic, 10—1200 m.)

*Ophiocolex glacialis* (mainly arctic, 100—1800 m.)

*Cucumaria calcigera* (mainly arctic, 5—500 m.)

*Phyllophorus pellucidus* (mainly arctic, 10—380 m.)

None of these species, however, can, as will be seen from the remarks appended, be regarded as furnishing absolutely certain proof of the Atlantic character of the fjords, although *Aega ventrosa*, *Ianira maculosa*, *Pycnogonum littorale*, and *Nymphon macrum* tend mostly in this direction. The 4 Echinodermata are here not of much account, being but little sensitive as regards depth or temperature.

### 3. Littoral Fauna (0—200 m.)

(K. St. Danmark Exped. p. 581; Conspectus p. 419. — Th. Mortensen, Danmark Exped. p. 294; Conspectus p. 313).

To this group should be added such bottom forms as are not included under Groups 1 and 2.

### 3 A. Endemic West Greenland (and Eastern American) species + the corresponding "American" species.

(K. St., Danmark Exped. p. 582; Conspectus p. 419).

To this group belong 24 (21) Crustacea (*Ianthe libbeyi* Ortmann erased as being synonymous with *Ianira tricornis* Kr.); the "American" fauna including *Chionoecetes opilio*, *Spirontocaris Fabricii*, *Sp. macilentus*, and *Eudorellopsis integra*. In addition, we have here to add the new species *Halirages bispinosus* n. sp. Of Echinodermata there are 3 (*Asterias polaris*, *Ophioglypha nodosa*, and *A. Stuwitzii*) which are only found in East-American and W. Greenland waters.

Of these 27 (24) species, the "Rink" has only found 8, viz. *Spirontocaris microceros*, *Metopa groenlandica*, *M. carinata*, *Paramphithoë Boeckii* and *Halirages bispinosus*, and (of American species) *Chionoecetes opilio*, *Spirontocaris Fabricii*, and *Asterias polaris*. Of these, *Chionoecetes* has not hitherto been found S. of abt.  $66\frac{1}{2}^{\circ}$  N. and *Paramphithoë Boeckii* not S. of Godthaab (abt.  $64^{\circ}$  N.). The new *Halirages bispinosus* was only found in one place.

### 3 B. Endemic Greenland species.

(K. St., Danmark Exped. p. 584; Conspectus p. 419).

Of Crustacea, 5 species belong here, of which two are "American" viz; *Nectocrangon* lar and *Spirontocaris groenlandica*. Of Echinodermata the only one falling to this group, is *Pedicellaster palaeocrystallus*.

This group is in the "Rink" material represented by the two "American" species and *Amphithopsis megalops*.

### 3 C. Arctic littoral species, found from Greenland to Spitzbergen or farther east, but not N. of Siberia, and in Norwegian waters not S. of Finmark.

(K. St., Danmark Exped. p. 584).

To this group belong 36 (27) species of Malacostraca and Pycnogonida, besides the following 6 (3) Echinodermata:

<i>Trochoderma elegans</i>	? <i>Stichaster albulus</i>
? <i>Solaster glacialis</i>	? <i>Pedicellaster typicus</i>
— <i>squamatus</i>	<i>Amphipholis Torelli</i>

In addition, the group should also include the following Echinodermata, which may be called "American" as they are also found on both sides of the American continent.

<i>Chirodota laevis</i>	<i>Henricia sanguinolenta</i>
<i>Eupyrus scaber</i>	? <i>Pteraster obscurus</i>
<i>Cucumaria calcigera</i>	

Of these 47 (33) species, the "Rink" has only taken 12, viz; *Sclerocrangon boreas*, *Aristias tumidus*, *Anonyx nugax*, *Dulichia spinosissima*,

*Ianira tricornis*, *Diastylis Goodsiri*, *Chirodota laevis*, *Cucumaria calcegera*, *Eupyrigus scaber*, *Stichaster albulus*, *Pedicellaster typicus*, *Henricia sanguinolenta*; their occurrence in the area investigated by the "Rink" does not, however, augment their area of distribution as formerly known to any essential degree, save in the case of *Pedicellaster typicus*, which had not previously been found S. of  $66\frac{3}{4}^{\circ}$  N. and which possibly belongs to the deep Atlantic fauna.

**3 D. Arctic littoral species, found from Greenland to the eastward as Siberia inclusive, and thus probably circumpolar, but not found in Norwegian waters S. of Finmark.**

(K. St., Danmark Exped. p. 588; K. St., Conspectus p. 420).

To the 15 (13) Crustacea mentioned in the Danmark Exped. should be added *Typhlotanais finmarchicus*, (?) *Leptognathia Sarsii*, and possibly also *Metopa leptocarpa*, although this last-named species has been found S. of the area at Kristianssund in Norway. And in addition, *Mysis oculata*.

Of Echinodermata, the following belong here:

<i>Myriotrochus Rinkii</i>	<i>Asterias panopla</i>
<i>Psolus Fabricii</i>	<i>Ophiura Sarsii</i>
<i>Pteraster militaris</i>	<i>Ophiocten sericeum</i>
<i>Paraniomorpha tumida</i> (also in deeper water)	<i>Ophiopleura borealis</i>
<i>Asterias Mülleri</i>	<i>Gorgonocephalus arcticus</i>
— Linckii	— eucnemis
	<i>Heliopecten glacialis</i>

in addition to some also found in the North Pacific, viz

*Ctenodiscus crispatus*  
*Ophiopholis aculeata*  
*Amphiura Sundevalli*.

Of all these species the "Rink" material includes:

<i>Mysis oculata</i>	<i>Asterias Mülleri</i>
<i>Paroediceros lynceus</i>	<i>Ophiura Sarsii</i>
<i>Rhachotropis aculeata</i>	<i>Ophiocten serium</i>
<i>Amathilla pinguis</i>	<i>Heliopecten glacialis</i>
<i>Dajus Mysidis</i>	<i>Ctenodiscus crispatus</i>
<i>Psolus Fabricii</i>	<i>Ophiopholis aculeata</i>
<i>Pteraster militaris</i>	<i>Amphiura Sundevalli</i>
<i>Paraniomorpha tumida</i>	

**3 E. Boreo-arctic species, found from America or Greenland to Spitzbergen, but not N. of Siberia, and in Europe not south of Finmark.**

(K. Stephensen, Danmark Exped. p. 590; Conspectus p. 420).

To this group belong 103 Crustacea and Pycnogonida mentioned in the Danmark Exped. and the Conspectus (*Idotea metallica* is erased, belonging in reality to the surface plankton; *Leptognathia longiremis*

likewise erased) to which must now be added *Mysis mixta* and *Metopa sinuata*, making 105 species in all.

The groups includes on the other hand but few Echinodermata, viz:

<i>Cucumaria frondosa</i>	<i>Diplopteraster multipes</i>
<i>Psolus Phantapus</i>	<i>Ophiura robusta</i>

all of which are found in the "Rink" material with the exception of *Diplopteraster*.

Of Crustaceans, the "Rink" found 35 species, viz:

<i>Hyas coarctatus</i>	<i>Paramphithoë bicuspis</i>
— <i>araneus</i>	— <i>assimilis</i>
<i>Eupagurus pubescens</i>	<i>Parapleustes glaber</i>
<i>Sabinea Sarsii</i>	<i>Acanthonotosoma serratum</i>
<i>Spirontocaris spinus</i>	<i>Odius carinatus</i>
— <i>Gaimardii</i>	<i>Calliopius laeviusculus</i>
— <i>turgida</i>	— <i>Rathkei</i>
<i>Mysis mixta</i>	<i>Rhachotropis inflata</i>
<i>Socarnes VahlII</i>	<i>Ampelisca macrocephala</i>
<i>Tryphosa nanoides</i>	<i>Protomedeia fasciata</i>
<i>Orchomenella pinguis</i>	<i>Dulichia tuberculata</i>
<i>Amphilochus manudens</i>	<i>Aeginella spinosa</i>
<i>Metopa longimana</i>	<i>Caprella septentrionalis</i>
— <i>neglecta</i>	<i>Calathura brachiata</i>
— <i>Bruzellii</i>	<i>Munna minuta</i>
— <i>sinuata</i>	<i>Phryxus abdominalis</i>
<i>Syrrhoë crenulata</i>	<i>Bopyroides Hippolytes</i>
<i>Monoculodes latimanus</i>	

The following 8 (6) Pycnogonida were also found:

<i>Pycnogonum littorale</i>	<i>Nymphon glaciale</i>
<i>Phoxichilidium femoratum</i>	— <i>longitarse</i>
<i>Pseudopallene circularis</i>	— <i>Stroemii</i>
<i>Nymphon grossipes</i>	— <i>grossipes</i>

### 3 F. Boreo-arctic circumpolar (?) species, found in Europe S. of Finmark. (K. St., Danmark Exped. p. 601).

In the Danmark Exped. 19 Malacostraca are recorded from this area. The "Rink" found a surprisingly large number (13 in all) viz:

<i>Spirontocaris polaris</i>	<i>Pontogeneia inermis</i>
<i>Diastylis Rathkei</i>	<i>Halirages fulvocinctus</i>
— <i>scorpioides</i>	<i>Gammarus locusta</i>
<i>Orchomenella minuta</i>	<i>Ampelisca Eschrichtii</i>
<i>Pontoporeia femorata</i>	<i>Haploops tubicola</i>
<i>Monoculodes borealis</i>	<i>Ischyrocerus anguipes</i>
<i>Pleustes panoplus</i>	

To the same group belong 6 Echinodermata, viz:

*Phyllophorus pellucidus* (extending southwards as far as England)

*Pteraster pulvillus* (to southern Norway)

*Solaster papposus* (southward as far as the Channel)

— *endeca* (southward as far as Ireland, but not found N. of Siberia)

*Ophiacantha bidentata* (also found in the deep Atlantic, and Japan)

*Strongylocentrotus droebachensis* (southward as far as the Channel).

These are found in the "Rink" material with the exception of *Pteraster pulvillus* and *Solaster endeca*.

Both Crustacea and Echinodermata belonging to this group are thus represented in the "Rink" material by about the same high percentage, viz: abt. 67—70 %.

#### 4. Species of uncertain zoogeographical position.

(K. St., Danmark Exped. p. 615; Conspectus p. 421).

Under this head should be classed at least 16 (15) Crustacea and Pycnogonida, and among Echinodermata, *Ophioscolex glacialis*, which however, belongs rather to the deep Atlantic, but is also found in the arctic deep. Only the lastnamed is found in the "Rink" material.

The fact that it is not at present possible to refer all the Greenland species to definite zoogeographical groups would seem to be due, not only to incomplete knowledge of the species in question, but also to the fact that some species are not particularly sensitive as regards temperature, and may thus be found outside the area of their principal occurrence. APPELLÖF has, in "Havbundens Dyreliv, (Norsk Havfiske; Norges Fiskerier, 1. 1905, p. 72, 73, 101, and also in Murray and Hjort; The Depths of the Ocean 1912, p. 533) mentioned a number of transition forms. J. GRIEG also, in "Evertebratfaunaen paa Havdypet utenfor 'Tampen' — Bergens Museums Aarbok 1914, No. 3, p. 4 seq.) mentions forms properly belonging to the high arctic regions, but which also penetrate into the boreal areas. Among Greenland Echinodermata Grieg thus notes *Ophiopleura borealis*, *Ophiopus arcticus*, *Gorgonocephalus eucnemis*, *Tylaster Willei*, *Poraniomorpha tumida*, *Solaster squamatus*, *Korethraster hispidus* and *Hymenaster pellucidus*.

#### 5. Species found both in the Atlantic and the Pacific ("American" species).

(K. St., Danmark Exped. p. 617; Conspectus p. 422.)

Of Crustacea and Pycnogonida this group includes, besides the 25 species named in the Danmark Exped. and the Conspectus, also *Eupagurus pubescens*.

Of Echinodermata, we have here:

*Chirodota laevis*  
? *Eupyrgus scaber*  
*Molpadia oölitica*

*Laetmogone violacea*  
*Cucumaria calcigera*  
*Leptychaster arcticus*



<i>Astrogonium Parelîi</i>	<i>Ophiura Sarsii</i>
<i>Ctenodiscus crispatus</i>	? — <i>robusta</i>
<i>Solaster papposus</i>	— <i>nodosa</i>
— <i>endeca</i>	<i>Ophiomusium Lymani</i>
<i>Lophaster furcifer</i>	<i>Ophiopholis aculeata</i>
<i>Pteraster militaris</i>	<i>Amphiura Sundevalli</i>
<i>Diplopteraster multipes</i>	<i>Ophiacantha bidentata</i>
<i>Henricia sanguinolenta</i>	<i>Phormosoma placenta</i>
? <i>Asterias polaris</i>	<i>Strongylocentrotus droebachiensis</i>

## II. Plankton.

(K. St., Danmark Exped. p. 606; Conspectus p. 421). — This group naturally includes neither Pycnogonida nor Echinodermata.

### A. Arctic Plankton species.

(K. St., Danmark Exped. p. 607; Conspectus p. 421).

In the Danmark Exped., 18 species of Malacostraca are noted, to which must be added *Boreomysis* scyphops; on the other hand, *Mysis oculata* and *Dajus Mysidis* at least should be erased, as being in reality littoral forms; these are therefore noted in the present work under the heading of bottom fauna.

Of all the mainly arctic species the "Rink" material includes only *Euthemisto libellula*, this, however, only in small quantities as compared with the other Hyperines.

*Apherusa glacialis* (Conspectus p. 175) which is an arctic species, and may with some reason be referred to the plankton, was strangely enough found at great depths both at the mouth of Kvanefjord and up in Bredefjord (*vide* p. 289).

*Pseudalibrotus Nanseni* (*vide* p. 278) which is new for Greenland, was taken up in the Sermilik and in Bredefjord with 400, 500 and 800 m.w., i. e. probably about 200—400 m. below the surface. This is an arctic species, hitherto found only in the Siberian sea; the determination is, however, not absolutely certain, and it is moreover, not impossible that it may have been taken nearer the surface than the length of wire would seem to indicate.

Entomostraca are not included in the geographical survey given in the Danmark Exped.; the character forms for plankton are however, noted in the present work.

*Pseudocalanus elongatus* (Conspectus p. 312) appears in the "Rink" material as a surface form (0—abt. 100 m.) predominating over all other species at these depths; it is mainly an arctic form, but is found as far south as the Mediterranean and the Black Sea.

*Calanus hyperboreus* (Conspectus p. 307) is mainly arctic, but is also found in warmer water layers, as for instance along the whole of the Norwegian coast. In the "Rink" material it amounts to abt. 5—10 % of the Copepoda from 200 m. depth and beyond.

Very much the same applies to the distribution of *Calanus finmarchicus* (Conspectus p. 308); at depths of 200 m. and beyond, however, it amounts to abt. 80—90 %.

### B. Boreal (Atlantic) Plankton species.

(K. St., Danmark Exped. p. 609; Conspectus p. 421).

In the Danmark Exped., 52 Atlantic Plankton Malacostraca are mentioned; *Mysis mixta* should be erased, as being a bottom form, while on the other hand, *Idotea metallica* should be reckoned to the plankton and not to the bottom fauna.

Of these, the "Rink" found 14 species in all, viz:

- × *Pasiphaë tarda* (Conspectus p. 47)
- Meganyctiphanes norvegica* (ibid. p. 55)
- Thysanoessa inermis* (ibid. p. 56)
- *longicaudata* (ibid. p. 57)
- *Raschii* (ibid. p. 59)
- × *Boreomysis arctica* (ibid. p. 67)
- Hyperia galba* (ibid. p. 97)
- *medusarum* (ibid. p. 96)
- Euthemisto compressa* (ibid. p. 102)
- *bispinosa* (ibid. p. 104)
- Parathemisto oblivia* (ibid. p. 104)
- × *Scina borealis* (new for Greenland).
- Aega ventrosa* (Conspectus p. 233)
- besides (of Entomostraca) × *Podon Leuckartii*.

Of these, only the 4 marked × are known exclusively from the Atlantic region. The others should mainly be called Atlantic, having their principal occurrence in the warm atlantic water; they have, however, also been found living under purely arctic conditions, and cannot therefore testify to the character of the fjord fauna. As however, the Atlantic water ( $> 3.5^{\circ}$ ,  $> 3.5\text{‰}$  salinity) does not appear until a depth of 200—250 m. below the surface, (corresponding to 400—500 m. w. with the ringtrawl) we may disregard such species as were found nearer the surface. The distinctly Atlantic species *Pasiphaë tarda*, *Boreomysis arctica* and *Scina borealis* were taken in these deep layers, whereas *Podon Leuckartii* was found at the surface.

### Zoogeographical character of the separate fjords.

The present investigations are chiefly concerned with the deeper parts of the fjords, as the littoral fauna, being common to Greenland generally, is of minor importance to the question at issue. The following pages, therefore, deal only with the stations in 200 m. of water and

beyond; the species taken nearer the surface will easily be seen from the lists on p. 347 (bottom fauna) and p. 354 (plankton).

### 1. Bredefjord and Sermilik (chart p. 323).

Bredefjord, with Sermilik, will here be taken first as the richest and best investigated water. With regard to the depths, *vide* p. 233, 353 and for hydrographical conditions p. 362.

The bottom Crustacea taken in this fjord at depths  $> 200$  m. are as follows<sup>1</sup>:

*Chionoecetes opilio*,  $\times$  *Munidopsis curvirostra*, *Diastylis Goodsirii*, *Neohela monstrosa*, *Caprella Rinkii*, *Calathura brachiata*, (*Aega ventrosa*), *Ianira maculosa*, *I. tricornis*,  $\times$  *Eurycope producta*, *Saccopsis Terebellidis*(?),  $\times$  *Scalpellum Stroemii*.

The following Pycnogonida were taken at  $> 200$  m.: *Pycnogonum littorale*, *Nymphon Stroemii*  $\approx$  *gracilipes*, *N. macrum*, *Chaetonymphon hirtipes*.

Also the following Echinodermata: *Heliometra glacialis*,  $\times$  *Hathrometra Sarsii*, *Pteraster hastatus*,  $\times$  *Poraniomorpha hispida*,  $\times$  *Astrogonium Parelii*, *Ophiura Sarsii*,  $\times$  *Amphiura denticulata*,  $\times$  *Ophiacantha anomala*,  $\times$  *Ophiolebes claviger*, *Ophioscolex glacialis*,  $\times$  *Gorgonocephalus Lamarekii*,  $\times$  *Molpadia oölitica*,  $\times$  *Laetmogone violacea*, *Cucumaria calcigera*, *Phyllophorus pellucidus*,  $\times$  *Psolus valvatus*.

Among the Plankton the following species of Crustacea were only found at depths  $> 200$  m.:  $\times$  *Pasiphaë tarda*,  $\times$  *Boreomysis arctica*,  $\times$  *Scina borealis*, (?) *Pseudalibrotus Nanseni* and *Apherusa glacialis*, i. e. 3 true Atlantic species, whereas the two lastnamed are arctic. These two last species were however, with the exception of *Apherusa glacialis*, (Bredefjord, St. 30, Nansen-net 550—450 m.) taken with the ringtrawl, so that it is not impossible that they may in reality have been taken nearer the surface.

This gives, for Crustacea, Pycnogonida, and Echinodermata, 37 species in all, of which 14 are true types of Atlantic fauna.

Two species, *Calathura brachiata*, and *Neohela monstrosa*, are known from the arctic deep, but cannot be said to be truly arctic; *vide* Group 1. C. p. 366.

Some species are also found in shallower water, and cannot therefore be certainly classed as Atlantic deep sea forms, viz:

*Neohela monstrosa*, *Aega ventrosa*, *Ianira maculosa*, *Pycnogonum littorale*, *Nymphon Stroemii*, *N. macrum*, *Chaetonymphon hirtipes*, *Heliometra glacialis*, *Ophioscolex glacialis*, *Cucumaria calcigera*, *Phyllophorus pellucidus*.

With regard to these species, *vide* p. 368.

The remainder should doubtless most properly be classed as arctic

<sup>1</sup> Denotes species which are true types of the deep Atlantic fauna.

(or boreo-arctic) littoral species; these are: *Chionoecetes opilio*, *Dia-stylis* Goodsiri, *Ianira tricornis*, *Ophiura Sarsii*, *vide* Group 3A, 3C—3D, p. 369—70.

Of all these 37 species, only two, viz: *Nymphon Stroemii*  $\approx$  *gracilipes* and *Boreomysis arctica* were also found in the Sermilik.

Bredefjord and Sermilik thus include among their deep water fauna 14 true types of the deep Atlantic, while of arctic deep sea forms there is at the most but one (*Pseud-alibrotus Nansenii*? — *Apherusa glacialis* is mainly a littoral form). This is thus a good foundation for the conclusion that the fauna of the fjord is Atlantic.

The littoral forms (0—200 m.) will, as already mentioned, not be dealt with here, being of no interest in this connection; some few of them penetrate farther down than 200 m. These also, however, show that the fauna is far poorer in Sermilik than in Bredefjord itself; of the 89 bottom forms found in Bredefjord, only 7 were taken in Sermilik, while our material from the latter water contains no species not also found in Bredefjord. For the rest, *vide* list p. 348—51, where all bottom forms are noted.

## 2. Skovfjord and Tunugdliarfik (Eriksfjord).

(For depths etc. *vide* p. 233, 354; hydrographical conditions p. 363).

The species only found at depths beyond 200 m. are:

*Pandalus borealis*, *Halirages fulvocinctus*, *Nymphon Stroemii* (non *gracilipes*), *Asterias Müllerii*, *Stichaster albus*, *Pedicellaster typicus*, *Ophiura Sarsii*.

None of these species are exclusively Atlantic deep sea forms, but should rather be called boreo-arctic littoral forms, being but little dependent either upon depth or temperature. Skovfjord and Tunugdliarfik are therefore, if not Atlantic, at any rate not truly arctic waters, since no purely arctic deep sea forms were found there.

The littoral fauna includes 46 species (*vide* list p. 348—51) but is of no interest in this connection.

## 3. Kvanefjord.

(For depth etc. *vide* p. 234; hydrographical conditions p. 364).

Of species only found at depths beyond 200 m. we have here but 4, viz: *Pandalus borealis*, *Aeginella spinosa*, *Phryxus abdominalis*, and *Ctenodiscus crispatus*; these species however, tell us nothing as to the character of the fauna, as they cannot be exclusively ascribed to any particular group. *Aeginella spinosa* is, it is true, mainly an arctic deep sea form; on the other hand, *Pandalus borealis* is more Atlantic.

The littoral species found numbered 34 (*vide* list p. 348—51).

4. **Northern Stromfjord (67°27'—68° N.) as the type of a West Greenland fjord with arctic bottom water.**

(Hydrographical conditions *vide* p. 365).

As already mentioned several times in the foregoing, this fjord was investigated in 1911 by Dr. V. NORDMANN, who took it as a type of the fjords with negative temperature at bottom. The Crustacea and Pycnogonida from these investigations were dealt with by the present writer in Meddel. om Grøn., vol. 51, 1913, p. 53—77; the Echinodermata have not been treated in any special work, but were determined by Dr. TH. MORTENSEN and included in his survey of the Greenland Echinodermata in Meddel. om Grøn., vol. 23, 1913 (1914), p. 299—379, from which the list here given has been taken.

In order to show the differences apparent in the deeper parts (> 200 m.) of this arctic fjord, I append a list of the Crustacea and Pycnogonida taken at depths beyond this, (NORDMANN had no ring-trawl, and the Nansen-net was only employed at some few places, so that only a small amount of plankton was brought home, apart from the surface forms).

Hyas coarctatus	Acanthozone cuspidata
Eupagurus pubescens	Parapleustes pulchellus
Spirontocaris spinus	Unciola leucopis
— Gaimardii	Erichthonius megalops
Eudorella emarginata	Podocerus latipes
Aristias tumidus	— pusillus
Stegocephalus inflatus	Ianira Vilhelminae n. sp.
Acanthonotosoma serratum	Mesidotea Sabinei
Haploops setosa	Balanus porcatus
— tubicola	Herpyllobius arcticus
Metopa pollexiana	Pseudopallene circularis
Melita dentata	

True, this list contains no deep sea forms of true arctic character, but the species are boreo-arctic or purely arctic littoral forms (no Atlantic deep sea forms). There is this important difference between the arctic and the Atlantic species, that the latter are only found below a certain depth (abt. 200—300 m.) as the Atlantic water does not reach higher, whereas the arctic (or boreo-arctic) species are not nearly so dependent upon depth. Given a sufficiently low temperature, then even species which must be classed as deep sea forms may move up into comparatively shallow water, even to abt. 5—10 m. (*vide* my work on Danmark Exped. p. 504) whereas on the other hand, species essentially belonging to the littoral belt may go down to greater depths, (which last applies by the way, to the Echinodermata in a far higher degree than the Crustacea).

Of the 23 Crustacea and Pycnogonida above mentioned 2 (*Mesiodotea sabinei* and *Herpyllobius arcticus*) are truly arctic; 9 are mainly arctic, viz: *Eupagurus pubescens*, *Spirontocaris spinus*, *Stegocephalus inflatus*, *Acanthozone cuspidata*, *Parapleustes pulcher*, *Unciola leucopis*, *Erichthonius megalops*, *Podocerus latipes*, *Pseudopallene circularis*; the remainder are boreo-arctic. Of true arctic species, the "Rink" found only *Eupagurus pub.*, *Spiront. spinus*, *Stegoceph. infl.*, *Herpyll. arct.* and *Pseudopallene circ.* and these only at depths  $< 200$  m. i. e. in the arctic littoral belt.

Dr. NORDMANN found in all 23 Echinodermata, as follows:

<i>Chirodota laevis</i>	<i>Asterias Mülleri</i>
<i>Myriotrochus Rinkii</i>	— <i>polaris</i>
<i>Cucumaria frondosa</i>	<i>Ophiura Sarsii</i>
— <i>calcigera</i>	— <i>robusta</i>
<i>Psolus Fabricii</i>	— <i>nodosa</i>
— <i>phantapus</i>	<i>Ophiocten sericeum</i>
<i>Phyllophorus pellucidus</i>	<i>Ophiopholis aculeata</i>
<i>Ctenodiscus crispatus</i>	<i>Amphiura Sundevalli</i>
<i>Solaster papposus</i>	<i>Amphipholis Torelli</i>
<i>Pteraster militaris</i>	<i>Ophiacantha bidentata</i>
<i>Henricia sanguinolenta</i>	<i>Gorgonocephalus eucnemis</i>
<i>Stichaster albulus</i>	

Of these, only 2, viz: *Chirodota laevis* and *Phyllophorus pellucidus* were taken exclusively at depths  $> 200$  m.; all the others were taken at somewhat varying depths, in the case of one species varying moreover from abt. 10 to abt. 400 m. As to these, the same applies as in the case of the Crustacea, i. e. none of them are true deep sea forms, but all are (boreo-arctic or) arctic littoral forms, which can go down to considerable depths. The fact that a number of these species were also found in Bredefjord, not only  $< 200$  m., but also in the more Atlantic water deeper down, shows that several of the Echinodermata are comparatively little affected by considerations of temperature.

IV.

THE ANGMAGSALIK ESKIMO

NOTES AND CORRECTIONS TO VOL. XXXIX OF  
MEDDELELSER OM GRØNLAND

BY

THOMAS THOMSEN





IN the year 1884, GUSTAV HOLM, then First Lieutenant in the Danish Navy, landed in the Angmagsalik district for the purpose of wintering among an Eskimo tribe, concerning which nothing was known in Europe at that time. The event forms something of an epoch in the history of Danish arctic investigation. The discovery of Angmagsalik opened up a new and important field for research: the tribe in question, living untouched by civilisation, had retained much which the Eskimos of Western Greenland had discarded during the course of close upon 200 years of Danish influence, and had, on the other hand, developed in their isolation various peculiarities unknown to their kindred on the west.

There was much to do, and much was done, that winter in Angmagsalik: an extensive collection illustrative of native culture was brought home in the following year, and the results of the winter's work were set forth in an exhaustive treatise<sup>1</sup>, cleverly and brightly written, and illustrated with numerous plates, the appearance of which deservedly aroused considerable remark.

Despite the care and acumen exhibited in gathering together the original collection (now preserved in the National Museum at Copenhagen) the material nevertheless naturally needed to be augmented here and there. Such supplementary material was also furnished, in considerable quantity, by C. RYDER, who stayed for some time at Angmagsalik in September 1892, on his return from the expedition to Scoresby Sound<sup>2</sup>.

A further unique addition was made to the collection by G. AMDRUP's Expedition, 1898—1900. At Nualik, north of Angmagsalik, Lat. 67°15'5" N.) the travellers came upon a house with furnishings and gear intact, while skeletal remains of the inmates scattered about outside seemed to suggest that the entire family had perished simultaneously by some mischance, in all probability poison. On coming in to Angmagsalik, Capt. AMDRUP showed some of the implements found to natives

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<sup>1</sup> G. HOLM: *Ethnologisk Skizze af Angmagsalikerne*. 1887. (Meddelelser om Grønland vol. 10.)

<sup>2</sup> Cf. *Meddelelser om Grønland* vol. 17, p. 138 ff.

there, who recognised the things as having belonged to a party which had set out to the northward in 1882, and had never returned<sup>1</sup>.

These three collections together serve to illustrate the culture of Angmagsalik at about the time of its discovery.

In 1894, a new stage in the development of the place was reached, a Danish trading station and mission settlement being then established there. Since that time, the trading interest has been superintended by one man, Kolonibestyrer JOHAN PETERSEN, who had himself been one of the members of the HOLM expedition. Keenly interested in ethnographical work, Hr. JOHAN PETERSEN has repeatedly rendered valuable service to the National Museum, not only by procuring specified objects which it was desirable to acquire, but also by personally tendering independent contributions. The Mission authorities also took an interest in the work, and both Pastor C. RÜTTEL and his successor, KR. ROSING, have furnished material of great value, and hardly obtainable from other quarters, such as for instance the collection of amulets given up by newly baptised Eskimos; Pastor ROSING's collection of these is particularly valuable, on account of the detailed information with which it is supplemented.

Finally, a small collection, the result of a winter's stay in 1905—06, was furnished by Cand. W. THALBITZER.

In this series of collections, together with such minor additions as have been made from time to time, the National Museum possesses a remarkably complete equipment illustrative of the material culture of Angmagsalik from the time of its discovery in 1884 to the present day; the finds relative to older times, however, are very few.

Since the publication of HOLM's work, no scientific treatise dealing with this extensive collection has appeared. The task was one of considerable magnitude, and the announcement of a forthcoming volume on the subject, the cost of which was to be defrayed by the Carlsberg Fund, naturally aroused no little interest. The first portion of this work has now appeared, forming Vol. 39 of *Meddelelser om Grønland*<sup>2</sup>, an imposing volume, of no less than 755 pages, with illustrations amounting to 398 separate figures, the number of objects depicted being considerable more.

The work is thus abundantly illustrated; on perusal, however, it is at once evident that both the illustrations and the accompanying text stand strongly in need of some explanatory supplement or guide. The task of furnishing this last devolves, naturally enough, upon the National Museum, being a matter of plain duty towards the gentlemen

<sup>1</sup> *Meddelelser om Grønland* vol. 28, p. 310.

<sup>2</sup> *The Ammassalik Eskimo. Contributions to the Ethnology of the East Greenland.* Edited by WILLIAM THALBITZER. First Part. (This work is quoted in the following pages as *Thalb. II.*)

who have entrusted their collections to its care, as well as towards the science of which such collections form the principal foundation. It will be necessary, moreover, in the course of the work, to make various additions concerning different portions of the subject-matter.

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## PLAN AND CONTENTS OF THE WORK.

At a cursory glance, it appears somewhat difficult to obtain a clear idea as to the contents of the work. According to the Title Page, the work should contain "the ethnological and anthropological results of G. HOLM's expedition in 1883—85 and G. AMDRUP's expedition in 1898—1900". The Preface states that the volume combines "the ethnographic results of three Danish expeditions to East Greenland", namely, in addition to the two already mentioned, "W. THALBITZER's voyage and wintering at Ammassalik in 1905—06". On examination of the actual Contents we find, that the six first chapters (317 pages) consist of an English translation of G. HOLM's work already mentioned, and the papers published in connection therewith in Vol. 10 of *Medd. om Grønland*. The work has been partially revised, and augmented with some new matter: to HOLM's work, for instance, a description of the journey has here been added, together with some new reproductions, while on the other hand, most of the illustrations pertaining to the HOLM collection have been removed from their place, and new reproductions of the same objects included in Chapter VII.

The six first chapters are thus, in all essentials, a translation of previously printed work of acknowledged value. The seventh and last, which comprises the greater part of the book, is composed of entirely new matter. The first chapters having dealt with HOLM's expedition, one might naturally expect the last to give the promised ethnological and anthropological results of the AMDRUP expedition, or, trusting to the words of the Preface, one might even hope to find those of THALBITZER's as well; the title of Part VII, however, mentions only the ethnographical collections made by G. HOLM, G. AMDRUP and J. PETERSEN. The anthropologist who had hoped to find there G. AMDRUP's anthropological results will thus be disappointed, while the ethnographer, on the other hand, will be pleasantly surprised to find that the promised number of collections has been increased by one, viz; JOHAN PETERSEN's; he will also, on perusing the part in question, find both the "Grønlandske Administration's" and W. THALBITZER's collections represented.

The confusion which is thus apparent in the plan of the work as a whole is, however, by no means inherent in the task entrusted to the Editor, which was briefly and plainly this: to describe the AMDRUP

ethnographical collection. The first part of this work was already done<sup>1</sup>; all that remained was, practically speaking, to describe the find made at Nualik already referred to. The unique quantity of material thus obtained from a single house furnished an excellent basis for a valuable piece of work on the culture of the Angmagsalik Eskimo at the time immediately previous to the Danish occupation. This task, however, interesting though it might seem in itself, failed to satisfy our Editor, who "laid before the Commission . . . a plan of wider scope, in accordance with which the description of AMDRUP's collection was to be published jointly with an English edition of HOLM's *Ethnological Sketch of the Angmagsalik Eskimo*, along with the anthropological papers which had appeared in *Meddelelser om Grønland*' as the results of his famous expedition, and with new illustrations of his collection"<sup>2</sup>. And it is beyond question that HOLM's work, which was out of print, well deserved to be issued in a new edition, calculated to reach a wider circle of readers, and illustrated with modern reproductions on a larger scale, and more generally representative of the collection, in place of the crude lithographs which had served the purpose of the original work. With these two widely different tasks before him, then: to describe a collection, and to compile a new edition of a series of previously published papers, the Editor set to work.

Still insatiate, however, as it would seem, he continued to drag in new matter, which, gradually mounting up, threatened to submerge the original plan altogether: AMDRUP's interesting find, the principal value of which lay in the fact of its forming a single whole, is cut up into scattered illustrations, with no attempt at special and collective treatment, while the new illustrations prepared for HOLM's work are removed from their place in the same and strewn, together with those of AMDRUP's and many other collections, throughout the mentioned Part VII.

The inadvisability of such a method of treatment will easily be realised. HOLM's treatise appears no longer as an independent work, but as an appendix to that which forms the subject of the present observations. Its unity even is destroyed, while the illustrations with which it now appears have been drawn from different collections varying considerably in point of time and place. And finally, the Editor has not succeeded in dissociating the English translation from the original Danish edition, to which, albeit the work is no longer ordinarily procurable, reference is not infrequently made for illustrations.

<sup>1</sup> *Ethnological description of the Amtrup Collection from East Greenland*. Cop. 1909 (*Medd. om Grønland* vol. 28). This part of the work will be dealt with later on. It is referred to in the following pages as *Thalb. I*.

<sup>2</sup> Cf. *Thalb. II*, p. I—II.

## TREATMENT OF THE MUSEUM MATERIAL.

Prior to the commencement of his task, the Author was acquainted with the Museum "only as a general visitor" and found it "almost impossible . . . to see what is placed at the back" of the cases<sup>1</sup>. Later on, however, his interest in Museums increased: "I began to take more pleasure in the collections of Museums than before; the dead objects assumed life and personality. From the silent cases I began to hear the language and thoughts of the people"<sup>2</sup>. Nevertheless, after having photographed here as much as he pleased ("the work . . . extended over 16 days") he felt "no inducement to continue" his studies of the objects removed from their cases for his examination. The reader will doubtless be disposed to acquiesce in Mr. THALBITZER's statement as to the "strength" of the work having been "reduced" thereby<sup>3</sup>.

So completely, indeed, did the Author relinquish his studies at the Museum, that he did not even make any enquiry as to the origin of the objects which he had selected and photographed; had he but handed in a list of the numbers, with a request for particulars of each, the result would, as will subsequently be seen, have increased the value of the work to no slight degree.

Mr. THALBITZER has himself, albeit somewhat tardily, realised to a certain extent the disability thus involved. On the last page of the work, under the heading of "Corrigenda", he mentions that "in several of the objects . . . designated . . . as belonging to the HOLM collection doubts may be raised whether they really belong to this collection, or originate from GRAAH's journey, or have been added on later occasions, e. g. sent by J. PETERSEN from Ammassalik". The Author feels some uncertainty in this respect regarding ten illustrations in the text. "On the other hand", we read, "the nondescript objects shown in fig. 241 (p. 517) surely belong to the HOLM collection"<sup>4</sup>.

Such an observation can scarcely fail to produce a discouraging effect upon the reader, who is thus suddenly confronted with the possibility that certain objects are not from Angmagsalik at all, while others may be of far later date than HOLM's collection. To anyone in doubt on such a matter, the self-evident course would surely be: to ask. And the fact that the Author has not seen fit to adopt this obvious expedient is hardly calculated to inspire confidence. As it is, the Museum must now take upon itself the task of correctly stating the origin of the objects in question.

<sup>1</sup> THALB. II, pp. 328 and 325—26.

<sup>2</sup> I. c., p. 327.

<sup>3</sup> THALB. II, p. 329. The fact that the Editor seeks to lay this lack of interest on his part to the charge of the Museum should not be regarded as of any great importance. As will be seen in the following, his work elsewhere is subject to the same inconstancy.

<sup>4</sup> I. c., p. 755.

That Mr. THALBITZER regards the objects shown in Fig. 241 as "surely" belonging to the HOLM collection is hardly to be wondered at, since the implements in question are drawn in Plate XIX of HOLM's "Ethnologisk Skizze". On the other hand, his doubt as regards Fig. 190 is unfounded, which is just as well, in view of the fact that HOLM's name appears here, not only beneath the illustration, but also in the text.

Of the remainder, the greater part, viz; Figs. 172b, 314c, 314d, 315b, 315c, and 327b, belong to C. RYDER's collection, Fig. 334 is from that of JOHAN PETERSEN, while Nos. 273 and 309 represent objects brought in during the years 1849—54.

Doubts having thus arisen as to the correctness of the descriptions given, the Museum authorities found it advisable to go through the whole list of the objects stated as belonging to the HOLM collection<sup>1</sup>, which piece of work was amply justified by the results. It was found that the Author ought, as a matter of fact, to have included in his "doubtful" category a great deal more than the ten items to which he refers. True, this would have involved the necessity of expanding the note in question to an inconvenient length, since the items attributed to HOLM include, in actual fact:

79 objects brought home by C. RYDER in 1892. This considerable collection, numerically superior to HOLM's, can hardly have been unknown to Mr. THALBITZER — RYDER's name is mentioned on p. 325 — he appears, however, to have disregarded it altogether save when borrowing therefrom large quantities of material which he ascribes to the HOLM collection.

44 objects collected at different times by JOHAN PETERSEN.

13 belonging to the proceeds of W. THALBITZER's voyage in 1905—06, making about one-eighth of that collection. And this moreover, despite the fact that the Editor must be supposed to have had a certain acquaintance with the objects in question, since he gives a list of them on p. 752.

2 brought home by Pastor C. RÜTTEL, 1 anonymously contributed in 1894; 10 dating from the years 1838—65 and 2 from 1881.

We thus find that no less than 151, or two-fifths of the total number of objects attributed to HOLM, are in reality derived from other collections.

Here and there, it is true, the Author is at some pains to be more exact, in the figures marked "HOLM and later collections".

This designation, however, certainly appears somewhat remarkable when, as in Fig. 352, it applies to but a single object, this being, moreover, from C. RYDER's collection. It is equally misleading in the case

<sup>1</sup> In a few instances it has proved impossible to identify the objects as shown in the illustrations; possibly some of them may not be from the National Museum at all.

of Fig. 351; the three amulets there shown being all — as any ordinary visitor to the Museum might see from the labels attached — brought home by Pastor C. RÜTTEL, together with those marked c, d, e and f in Fig. 350.

Two pieces in the last-named figure, however, viz. a. and b. are from HOLM's collection. As regards a, we are informed in a note<sup>1</sup>: "The same object is seen in the illustration on p. 45". There is no illustration of this — or of anything else — on p. 45; we do find, however, in Fig. 45 on p. 117, a far better reproduction than the second edition on p. 632. Fig. 350b was found by HOLM in a grave at Ungudlik in the Julianehaab district, and is thus outside the sphere of the work in question.

This action of the Author in calmly attributing to the HOLM collection some hundred and fifty objects cannot be passed over by the Museum without comment, more particularly since the objects in question are taken from the collections of others. The men who have entrusted the results of their work to the care of the Museum would have good grounds for complaint on seeing their best items reproduced in a publication as belonging to another<sup>2</sup>. The Museum authorities, it need hardly be said, regard it as their duty towards research to afford anyone seeking material for scientific work the fullest liberty to make requisite search and selection of material; it is nevertheless an equally obvious duty to watch over the interests of the collectors in such cases as the present.

Apart from this, however, energetic protest must also be made on behalf of the science of ethnography itself, which forms part of the Museum's sphere of work.

The name of G. HOLM is permanently connected with the discovery of Angmagsalik, and future research will very justifiably take the reproductions of his collection as representative of the culture of Angmagsalik in 1884, when the natives were first brought into direct contact with

<sup>1</sup> THALE. II, p. 633.

<sup>2</sup> It is unfortunately hardly probable that even this correction will entirely suffice to obviate the consequence of the inaccuracy. A characteristic instance for the difficulty experienced in repairing an error once published is furnished by the case of E. W. NELSON's "The Eskimo about Bering Strait". In the course of printing, the texts beneath two of the plates were unfortunately transposed. The author did what he could to prevent the threatened confusion by inserting a slip in the work, with the necessary correction, to be pasted under the figures in question. Nevertheless we find that W. THALBITZER, in a work of popular character published in Sweden, entitled "Grönlandske Sagn om Eskimoernes Fortid" (p. 56) reproduces one of these plates with the erroneous text: "Eskimo from Alaska throwing a bird dart" the man in the picture having a seal spear in his hand. Such an error is naturally not likely to be further propagated by writers having any knowledge of the difference between these two common weapons; works are, however, frequently published by men having no very intimate acquaintance with the subjects of which they treat, whereby mistakes are circulated abroad.

the Danes. It is thus not a matter of slight moment that 60 of the objects thus described were brought home subsequently to the foundation of the Danish trading station there, not a few changes having taken place since HOLM's day<sup>1</sup>. A still graver fault, however, is the inclusion of half a score of objects which do not originate from Angmagsalik at all, but from the west coast, brought thither by natives from the east (all with one exception being from the south-east coast) before the discovery of Angmagsalik, for the most part as far back as 1839—65.

By way of example we may take Fig. 293 (p. 567) "Women's inner breeches". None of these are from HOLM's time; a. was received from JOHAN PETERSEN in 1908, b. from RYDER in 1892; both are, however, characteristic pieces of Angmagsalik work, whereas c. and d. were brought over by way of the West Coast in 1865 and 1846 respectively, and may easily be distinguished from the first two; d. especially is ornamented with a pattern entirely foreign to the style of dress in Angmagsalik.

We need not, however, peer into the future for possible harmful effects of our Author's carelessness; the work itself already exhibits instances of error arising from the incorrect designation of the objects shown in the illustrations.

Thus in Fig. 392, (p. 667) the subjoined text ascribes to the HOLM collection a kind of wooden calendar, brought home in 1848 and then described as originating from Eastern Greenland, not from Angmagsalik, the very name of which was then unknown.

In the Danish edition of HOLM's work<sup>2</sup> we find the following passage with regard to the reckoning of time then current in Angmagsalik:

"Division by weeks is of course unknown. HANSERAK made an almanach of the kind used on the West coast, i. e. made of wood and having seven holes, in which a peg is placed for every day in the week. We gave this almanach to Ilinguaki, in order that during the winter, when he lived far from us, he might be able to know when it was our Sunday. When we came to Ilinguaki next year, we found that he had been using it constantly".

The note in question is translated in W. THALBITZER's English edition, reference being made to Fig. 392<sup>3</sup>. Cand. THALBITZER must therefore have regarded the almanack shown in fig. 392 as the one made by HANSERAK for a special purpose.

Our examination of the material has been restricted to the objects photographed in the Museum, and therefore does not include the illustrations from AMDRUP's and JOHAN PETERSEN's collections, which were not deposited in the Museum until a later date. The examination revealed a number of other faults and omissions, such as incorrect indication of the scale of reproduction, query mark after the scale as given, inclusion

<sup>1</sup> cf. the Editor's own words l. c. p. 387 and p. 579.

<sup>2</sup> Medd. om Grønland, vol. 10, p. 141 footnote.

<sup>3</sup> THALB. II, p. 105.



of models and toy weapons among real implements intended for use, without any statement as to this being the case, and erroneous statements as to the material of which the objects were made. To avoid wearying the reader with unnecessary quotations, we may here once and for all refer to the list given in the following (p. 426 ff.) of such mistakes as have been discovered. Only such errors as demand more detailed treatment will be specially dealt with here.

#### TREATMENT OF THE AUTHORITIES QUOTED.

If the extent to which the Author has had recourse to the Museum is but slight, it must be admitted that the number of previously published works called into requisition for the compilation of the volume in question is by no means inconsiderable. The Author even devotes a separate chapter to consideration of the older literature concerning the Eskimo of Davis Straits<sup>1</sup>. This is perhaps somewhat of a digression from the actual object of the work, but will doubtless be welcomed by foreign readers, to whom the unpublished part at least of such documents would hardly be known. And for this very reason it is extremely likely that the chapter in question will be frequently quoted. It may therefore not be out of place to offer some remarks as to the four least known works there referred to.

With regard to OLEARIUS, Mr. THALBITZER states<sup>2</sup> that "the three Greenlanders brought to Copenhagen .. were sent to the king .... at Gottorp". In Note 2 on the same page, we read that "a contemporary painting of the four Greenlanders going from Greenland via Throndhjem, where the picture was painted, to Copenhagen, is found in the National Museum of Copenhagen".

This discrepancy in the figures, at which the reader naturally wonders, is due to the fact that one of the Greenlanders in question, the only male of the party, died on the way from Norway, and thus never reached Copenhagen at all. With regard to this note, it only remains to add that the king was not at Gottorp, but at Flensburg, whence he gave orders for the three Greenlanders to be sent to the Duke of Gottorp, "weil selbige auch sonderlich belieben tragen zu sehen, was Gott und die Natur an so fern abgelegenen Orten gibt und zeuget". The party had, moreover, travelled, not by way of Throndhjem, but via Bergen, where the picture was painted — which fact, by the way, the Author has himself referred to in an earlier part of the work<sup>3</sup>.

The next work quoted is DE POINCY's report of NICOLAS TUNES'

<sup>1</sup> THALB. II, p. 682—85.

<sup>2</sup> l. c. p. 682.

<sup>3</sup> l. c. p. 436.

voyage to Davis Straits in 1656<sup>1</sup>. We are informed by Mr. THALBITZER that he "landed at 64°10' N. lat., whether on Baffin Land or Greenland is not clear"<sup>2</sup>. On consulting the original, however, we find that he entered a fjord (rivière) at this latitude, and sailed thence northward as far as the 72nd degree, "where lies that land now to be described".

With regard to DE POINCY's description of the native dress, Cand. THALBITZER regards his statement to the effect that the women do not wear ear drops as "possibly . . . due to lack of observation, for he says, namely, that they wear neither bracelets nor necklaces nor ear-drops but are decorated by tattoo-markings on the cheeks". The suggestion as to "lack of observation" appears somewhat peculiar, in view of the fact that the passage quoted contains a distinct negation, together with a number of positive observations<sup>3</sup>. And when Mr. THALBITZER opines that it is "hardly possible that the use of bracelets should be unknown among them at the place and during the time of DE POINCY's observations" it should be remembered, that he has in the first place located the "place" in question under a wrong latitude, nearly 8° too far south, and further, that he does not even know on which side of Davis Straits it lies. DE POINCY expressly states that the Dutch mariner set out in search of new trading grounds<sup>4</sup> in the northern lands, so that he is hardly likely to have followed the usual route. The word "Observation" by the way, should naturally not be taken literally here: DE POINCY, as we know, did not see these things with his own eyes at all, but received his information from the Dutch Captain<sup>5</sup>.

The next source drawn upon by Cand. THALBITZER is the Manuscript of MATTHIAS SCHACHT, referred to in the "List of works consulted" as N. Kgl. S. 4° 1965 (and A. M. 364 Fol. and A. M. 775, 4°) Kbhvn. 1789. He quotes from this work on p. 635, where we find, in Note 2: "SCHACHT, (1789, but his MS written before 1700, when he died), p. 263".

In order to remove something of the difficulty which the reader would otherwise encounter in seeking out the source in question, we may at once observe that the information referred to will not be found in the MS. N. Kgl. Saml. 4to 1965, this being a copy made at the close of the 18th century, which breaks off abruptly in the middle of Chap. 22. Equally fruitless would it be to consult the alternative MS, A. M. 775 4to, this copy likewise terminating in the same chapter.

<sup>1</sup> In the list of works consulted, this is stated as in "chapter the 8th on Davis Straits". As a matter of fact, the chapter in question is the 18th.

<sup>2</sup> THALB. II, p. 683.

<sup>3</sup> DE POINCY even adds: "Mais pour tout ornement elles se font une taillade en chaque joue".

<sup>4</sup> "Découvrir quelque nouveau commerce".

<sup>5</sup> The chapter in question has been previously translated into English; vide DAVID MAC RITCHIE: The Eskimos of Davis Strait in 1656 (Scottish Geographical Magazine for June 1912).

There remains then no other source but the principal MS, A. M. 364 Fol.<sup>1</sup> True, the entire text of the work in question consists of but 192 written pages, of which, again, only 169 are numbered, so that p. 263 does not exist; the quotation in question will, however, be found on p. 166. It is unnecessary, by the way, to guess at the age of this MS, as it is fully dated<sup>2</sup>. We may, on the other hand, hazard a guess that it is the date of compilation of the MS. 1689 which has betrayed Mr. THALBITZER into quoting the year 1789. MATTHIAS SCHACHT, by the way, gives, at the commencement of his work, a long list of writers, which Mr. THALBITZER would have done well to make use of, when attempting to give a synopsis of early works on the subject of Greenland.

On pp. 635—36, the Editor quotes OLEARIUS and SCHACHT in evidence of the use of wooden dolls as idols in western Greenland in the 17th century. Mr. THALBITZER here states as follows: "Some idols of this kind were brought to Copenhagen probably by the Dannell expedition in 1654".

The passage in OLEARIUS from which this is taken runs as follows:

"Was der Grünländer Religion anlanget, hat man nicht erfahren können, wie es darumb beschaffen. Sie seynd ausser Zweyfel Heyden, und Götzendiener, wie dann einen solchen Götzen, welcher in der Strasse Davis vom Lande genommen, wir aus Paludanus Kunst Cammer bekommen. Ist aus Holtz grob geschnitzet, einer halben Ellen lang, mit Federn- und Haarfell bekleidet und mit kleinen lenglichten Thier Zahnen behenget" etc.<sup>3</sup>.

This statement has been entirely misunderstood by Cand. THALBITZER and needs explanation. OLEARIUS' "wir" refers to the "Kunstammer" at Gottorp, where he filled the office of librarian and antiquary. PALUDANUS is the Dutch physician BERNHARDUS PALUDANUS, whose "Kunstammer" at Enckhuisen was celebrated in its time<sup>4</sup>. He died in 1633, aged 83, and the collection was subsequently sold by this heirs to Duke Frederik III of Gottorp, forming the nucleus of the ducal Kunstammer. It was fetched by OLEARIUS in person in 1651<sup>5</sup>.

OLEARIUS, then, speaks not of several objects, but of one. This one was brought to Gottorp, not to Copenhagen, and brought, moreover, not from Western Greenland by DANNELL in 1654, but from some place

<sup>1</sup> As AM. 364 Fol. the MS. is cited also in P. LAURIDSEN: *Bibliographia Groenlandica* (Medd. om Grøn. vol. 13).

<sup>2</sup> Dabam Cartemindæ Septimo Calend. Maji Anni post reparatam salutem MDCLXXXIX.

<sup>3</sup> OLEARIUS p. 176 (cit. THALB. II, p. 683, Note 2).

<sup>4</sup> GEERART BRANDT: *Beschriewing en Lof der Stad Enkhuisen*. Blad 25—29, and A. I. VAN DER AA: *Biographisch Wordenboek der Nederlanden*.

<sup>5</sup> OLEARIUS: *Gottorfische Kunstammer*, introduction.

near Davis Straits to Holland, at any rate before 1633, and probably considerably earlier.

Failing, then, to find Cand. THALBITZER's Copenhagen idols in OLEARIUS' work, we may proceed to seek for them in that of SCHACHT. He however, evidently has his information from OLEARIUS and no other; he gives a reproduction of the wooden figure from the Gottorp Museum, and quotes the substance of OLEARIUS' report, not, it is true, the place quoted by Mr. THALBITZER, from the Persian journey, but that mentioned by SCHACHT himself; viz: *Gottorfische Kunstkammer Tab. IV, No. 5*. The text here is as follows: "Num. 5. Ist ein Abgott der Nordländer bey der Straat Davis, umb welchen sie, wie die Grünländer, denen ich es gezeigt, berichteten, herumb tantzen. Ist bekleidet mit rauchem Schaaffell, Vogelfedern, und mit kleinen Zähnen von Fischen behangen. Denn sie meynen, weil sie von den drey Elementen ihre Nahrung haben, müssen selbige auch als Götter geehret werden; wie noch jetzo die Heyden im Königreich Siam in Ostindien thun" etc. It will be noticed that OLEARIUS has here improved upon the former simple statement, by adding his theory of the three elements. SCHACHT follows him faithfully in this, and further declares the figure to be of Greenlandic origin, — which is more than OLEARIUS directly states — and proceeds, on his own account, to draw comparisons with Priapus and other phallic deities. Cand. THALBITZER again, does not consider the phallic element sufficiently pronounced in the figure in question, which induces him to "draw the conclusion that he" — i. e. SCHACHT — "speaks of another similar wooden doll in the Gottorp Museum" that is to say, one other than that which he shows in his illustration; a somewhat daring hypothesis.

The next and last source is "The Royal Private-Museum, which was for some time lodged at the Gottorp Castle" and "described by JACOBÆUS in his *Theatrum regium*".

It should here be noted that the title of the work in question is "*Museum Regium*" and that the Royal Museum never was "lodged at Gottorp". The Duke Frederik just referred to had there laid the foundation of his own collection; under his successors, however, relations between the ducal house of Gottorp and the King grew more and more strained, until finally, in 1721, the Gottorp estates in Slesvig were appropriated by the Crown. The Gottorp collection was subsequently, (abt. 1750) removed to Copenhagen and included in the Royal Museum<sup>1</sup>.

<sup>1</sup> In David Murray's "Museums, their history and their use", Glasgow 1904, Vol. 1, p. 96, we read: "The whole of the Gottorp collection ultimately found its way to St. Petersburg, and was absorbed in the Imperial collection". Upon what grounds this assertion is based I do not know: it is a fact, however, that in 1743, an "*Inventarium ueber die Kunst- und Naturalien Cammer des Schlosses Gottorff*", was drawn up at Gottorp Castle, the inventory in question being a catalogue of the collection as transferred to Copenhagen, in the collections of which city many of the original specimens from Gottorp may still be identified.

It is presumably this last fact which Mr. THALBITZER must have had in mind; he has merely, reversed the facts. This erroneous idea is doubtless likewise responsible for his explanation as to the Copenhagen dolls.

These four sources, — and it is doubtful whether DE POINCY refers to Greenland at all, while the Museum Regium is only one of the many contemporary Museum Catalogues in which objects from Greenland are included<sup>1</sup> — are, with the exception of the two well-known works of MARTIN FROBISHER and JOHN DAVIS, all that the Editor gives us regarding the land east of Davis Straits. It is thus but a very scanty and casual selection; he cannot be said to have mastered his subject to the full<sup>2</sup>.

Small as it is, however, this selection, and the manner in which it has been treated will yet suffice to convince the reader that the shortcomings of the work as a whole can at any rate not be laid to the charge of the National Museum, since the same faults are apparent in the sections compiled by Mr. THALBITZER from library and home studies.

What we have seen in the foregoing with regard to the Author's manner of dealing with his subject matter warrants a certain doubt as to the results which may be arrived at by such methods. This element of doubt is further increased by a closer study of the work.

To examine thoroughly, point by point, the whole of this loosely written and not particularly readable book would prove wearying alike to the critic and his readers, the more so, since the Author's own conclusions regarding one and the same object vary at different parts of the work. We must restrict ourselves to such brief consideration of certain portions as may serve in some degree to guide those wishing to make use of the book as a whole.

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## CONTRIBUTION TO THE HISTORY OF ANGMAGSALIK.

The earliest printed report in which the name Angmagsalik is mentioned dates from the visit of certain East Greenlanders to the nearest Danish trading outpost Pamiagdhluk, in 1860<sup>3</sup>. The earliest mention of the place by name is, however, somewhat prior to this, viz. 1849, when the first objects were brought home from there.

These objects, a water vessel and dipper<sup>4</sup> were sent to the then Ethnographical Museum by Kolonibestyryer O. V. KIELSEN, with the following information: "These two objects, the like of which no Greenlander

<sup>1</sup> E. g. Museum Wormianum, Gottorfische Kunstkammer etc. etc.

<sup>2</sup> Any reader seeking a fuller selection may find the same in the *Bibliographia Groenlandica*" above quoted. (*Medd. om Grøn.* vol. 13.)

<sup>3</sup> H. RINK: *Danish Greenland*. London 1877, p. 322; cf. THALB. II, p. 340—41.

<sup>4</sup> Ethnographical collection of the National Museum. Nos L. c. 267—68.

had ever seen, were brought to Julianehaab by a family from Angmarsalik, a place on the East Coast, said to be situated considerably farther to the north than Captain GRAAH's farthest point". These two objects, which are of interest as being the first ever brought home from Angmagsalik, are shown in W. THALBITZER's work as Fig. 280c and 273, both being there attributed, however, to the HOLM collection.

The water tub (Fig. 280c) is, it is true, larger than the other vessels from the same locality preserved in the Museum, but is in the main of the same shape as these. The dipper, however, (Fig. 273) merits closer consideration, being an interesting item in itself, though its peculiarity will hardly be realised at once from Mr. THALBITZER's description.

It is a bottle-shaped vessel, carved out of a lump of wood, but with a separate bottom nailed on. The Editor describes it thus: "Besides the drinking hole at the top of the neck there is a hole in the middle of the side so that it can be half filled without being put quite down into the water. This is very practical as the water-vessel is not always quite filled, and it may be difficult owing to the melting pieces of ice in it to let down the scoop or the bottle deep enough"<sup>1</sup>.

The extremely practical nature of this arrangement is less obvious when it is added, that the bottle is also furnished with a hole on the opposite side, this last hole being bored some 5 cm. only above the bottom. A thirsty man, attempting to drink from such a bottle, would hardly appreciate the value of the holes, through one or other of which the water would infallibly be spilt. From his photograph of the object, Cand. THALBITZER would of course only have been able to see one of these holes, and he had by that time evidently forgotten what he could hardly have failed to see when holding the object in his hand for actual inspection.

The Editor further says: "In JOHAN PETERSEN's collection there were also a few water-scoops and mugs of the same peculiar forms (Mikeeki's water-scoop etc., Nos 213—216)" The expression "Mikeeki's water-scoop etc." is incomprehensible to the uninitiated, referring as it does to the unpublished catalogue of a private collection which the Editor was at that time endeavouring to dispose of abroad"<sup>2</sup>. The collection has, however, since passed into the possession of the National Museum, so that we are in a position to explain the Editor's meaning. No. 213 is, it is true, of the same type, the others, however,

<sup>1</sup> THALB. II, p. 548.

<sup>2</sup> The value of this collection could hardly have been unknown to the Editor, since he mentions the name of the collector on the title-page of his work, and gives illustrations of over 50 of the objects included. The owner of the collection, however, could not be aware of its importance to the Danish Museum; had he been so we may be sure, from his former services rendered to the Museum, that he would first have offered the objects in question to his own country.

214—16, are of a different although in itself typical form, which fact the Editor has not seen fit to note (Fig. 1 in the present work)<sup>1</sup>.

From the dipper No. 213 the Editor might have gained some idea as to the purpose of the two holes in the ancient bottle from 1849. They were intended, as a matter of fact, to receive a wooden tube, the lower end of which fitted into the lower and smaller of the two holes, the tube itself serving both as a handle and a sucking pipe. Its length was such as to permit of the bottle being entirely filled, the air passing out through the tube while the vessel was filling. This Eskimo drinking vessel certainly seems to reveal a higher degree of ingenuity than the Tantalus arrangement suggested by Mr. THALBITZER's explanation. The fact of this bottle's having originally been furnished with a sucking pipe of this nature is noted, by the way, in the Museum Register.



Fig. 1.

In view of the interest attaching to this old-fashioned article, I approached Kolonibestyrer JOHAN PETERSEN with the object of gaining some further information as to his specimen. He informed me that it had been made to order especially for his collection, on the model of a type then obsolete. This fact is also noted in the Museum Register.

Mr. THALBITZER concludes his remarks with the following words: "These objects (the wooden bottle etc.) show us some recent examples of the Ammassalikers' skill in converting pieces of material of different shapes — here a round piece of wood — into useful objects which are not typical, rather quite unique, but may however, serve for practical purposes". It should be observed, however, as we have seen from the foregoing, in the first place, that the objects are not "recent examples" of Angmagsalik work one of them being the oldest piece of work ever brought home from there, and further, that they are, according to JOHAN PETERSEN's explanation, old and typical forms.

<sup>1</sup> The name Mikeeki, however, does not occur anywhere in the English catalogue of the collection lodged in the Museum.

## WHETTING IRONS.

Besides whetstones, iron is now also used at Angmagsalik for whetting knives. Kolonibestyrer JOHAN PETERSEN states, according to W. THALBITZER, that the iron is only used for sharpening women's knives, whereas the men still whet their knives on stone. Thus the women in this case stand for progress, since the whetting iron cannot be of very ancient date in a place where iron was so rare that pieces were often hacked off from the women's knives to make needles. Some specimens are, however, preserved in the National Museum, three of them shown in W. THALBITZER's work.

Two characteristic examples are shown in Fig. 190: "Drills or whetting irons? (HOLM coll.)" and are mentioned on pp. 479—80 under drills, as follows: "The two, very finely worked wooden hafts (drills?) in fig. 190, which were likewise<sup>1</sup> brought home by HOLM from Ammassalik, have regular ring grooves either for ornament or as bed for the drill line. The one has a thin cylindrical iron point, the other a heavier point, square in section (cf. fig. 202) with blunt end. The form of the shafts of these sticks is extremely rare even at Ammassalik, but incisions carved in the shaft to keep the string in position are known from other Eskimo regions (Baffin Land and Alaska)". And in a footnote, the Editor refers to "BOAS (1901) p. 28; see figs. 36 and 37b, c. MURDOCH (1892) fig. 159".

It is thus evident that the Author entertains some doubt as regards these objects, more especially in connection with the grooves in the hafts; he reassures his readers, however, by reference to competent authorities. One is therefore somewhat surprised to find, a little farther on, the following remarks anent whetstones: "The two drill-like objects in fig. 190 are (according to JOHAN PETERSEN) whetting irons for women's knives whereas men's knives are always sharpened on whetstones".

In the face of this, we must, it seems, relinquish altogether the "drill" alternative, and accept, once and for all, the two formerly doubtful implements brought back by HOLM as whetting irons. On the last page of the book, however, (p. 755) we find the term "whetting irons" again qualified by a parenthetic query "(drills?)" in addition to which, the implements in question are here included among the objects concerning which the Editor is in doubt as to whether they may possibly have originated from GRAAH's voyage, or have been sent over later by JOHAN PETERSEN.

Despite JOHAN PETERSEN's negation, the Editor is still, as we see, loth to relinquish his original idea: we can only suppose that he must have some strong grounds for retaining it.

Such grounds would hardly be furnished by the appearance of the objects themselves, which exhibit but very slight resemblance to drills. To the description given should, by the way, be added that the hafts are over 2 cm. thick at the top, the one marked b. being perfectly flat

<sup>1</sup> This refers to Fig. 191 of which, however, c. was brought home by Ryder.



at the end, so that they are hardly suitable for use with the mouthpiece. As regards the points, it should be noted that neither of them is sharp, the "point" of a., for instance, being a flat surface 8 mm square. With regard to the reference to Fig. 202, however, as a drill "used for making large holes" it should be noted that this implement is pointed.

It would seem then, that the Editor's opinion as regards the purpose of these implements must rest on the fact of similar instruments being found among other Eskimos. We may therefore proceed to consult the authorities he quotes.

Boas' Fig. 36 does not include a drill haft at all. What Cand. THALBITZER has taken for a shaft is, as a matter of fact, the drill bow itself. The text on p. 28 simply states: "The shaft of the drill is always thin in the middle, to prevent the strap of the bow from sliding off (Fig. 37)". Figs. 37b and c, and MURDOCH Fig. 159 again, illustrate nothing more than just this very feature. For greater convenience of comparison, one of the two whetting irons in question is shown in Fig. 2a of the present work, together with the most characteristic of the drill shafts given in the illustrations quoted.

The Editor need not, by the way, have remained long in doubt either as to the origin of the implements concerned or as to their purpose; full information on both heads could have been obtained on enquiry at the Museum; HOLM has expressly noted them, at time of delivery, as whetting irons<sup>1</sup>.

Another of HOLM's whetting irons, a peculiar piece of work, is shown in THALBITZER's Fig. 218c together with two other objects, together described there as "whetting stones". That the term is not due to a printer's error may be seen from the text, where we are informed that "the stone" is "inserted in a wooden haft carved like a dog(?)".

The Editor might well be unable to see from his photograph, that the "stone" was of iron, he must, however, when actually handling it in the Museum, have given the object but slight scrutiny. Nevertheless, Museum studies apart, he might easily have ascertained the true facts of the case from the book; the piece in question is shown in one of the illustrations in the Danish edition of HOLM's work<sup>2</sup> together with a number of women's knives, and there described as "a whetting iron for



Fig. 2.  $\frac{1}{2}$ .  
(b After F. Boas:  
Eskimo of Baffin  
Land and Hudson  
Bay fig. 37c).

<sup>1</sup> They are two of the four described as "4 whetting irons" in the catalogue of the collection as given in Medd. om Grønland, vol 10, p. 353.

<sup>2</sup> Medd. om Grønland, 10. Plate XIXh.

sharpening knives". He might even have read, what he himself had written, in his own English edition of the same work, the following passage: "A whetting iron inserted in a handle of wood is used for grinding knives with (fig. 218c)"<sup>1</sup> — referring, it will be noted, to this very figure.

These two instances, then, the water vessel and the whetting irons, serve to confirm the truth of the Editor's own very apt remark, which might well be taken as a motto for any ethnographical work based on museum studies: "It is a good thing to have a photograph of an ethnographic object, but still better to study it in the hand, view it from all sides, and possibly make a sketch of it"<sup>2</sup>.

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### IRON-BLADED CHISEL.

The whetting iron is ethnologically interesting as representing a certain type of implement; the importance of various iron tools occasionally found, on the other hand, lies in the fact of their illustrating the manner in which odd scraps of iron accidentally acquired are utilised by the finder to serve his own particular needs.

A specimen of such more occasional implements is the little iron chisel, fastened to a handle by thongs, which is shown in THALBITZER's Fig. 189, but there erroneously described as a hammer.

The illustration in itself should suffice to show the inaccuracy of this. The position in which the blade is fixed to the handle alone renders it impossible. The tool might with more excuse have been described as an axe. The blade is, however, quite small and light, with a distinct chisel edge at the one end, and evident marks of having been driven by a hammer at the other. All this might have been discovered by mere observation.

Here again, however, other sources of information were likewise open to the Author had he cared to use them. The tool in question is, in the first place, like the whetting iron just mentioned, shown in an illustration of that very work of which Mr. THALBITZER's book is a new and improved edition, and is there described as a chisel<sup>3</sup>. And in the second place, Mr. THALBITZER would, as a linguist, have had excellent opportunities of discovering, by actual inquiry among the Eskimo themselves, what was the true purpose of the implement. As to this, he remarks, on p. 678: "The word *ilageen* which I have erroneously given for a hammer like that seen in Fig. 189 means 'a wedge for splitting wood', possibly also a celt, a chisel". And we are further told: "The Eskimo, who was shown the illustration of a hammer in HOLM's book, evidently considered

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<sup>1</sup> THALB. II, p. 35.

<sup>2</sup> THALB. II, p. 327.

<sup>3</sup> Medd. om Grønland, vol. 10. Plate XVIII g.

the head as a wedge or a celt, and told me its name, which I then erroneously took to be the name of the hammer as a whole".

It should be noted, that the illustration in HOLM's book shown to the Eskimo was the very one here in question; the Eskimo then at once gave the thing its right name, which was the same as that appended to the illustration by HOLM himself. This was an excellent test of the Eskimo intelligence; unfortunately, however, Mr. THALBITZER declined to be guided thereby.

It may be as well in this connection to call to mind the reasons which persuaded Cand. THALBITZER in 1906 to publish the description of the AMDRUP collection. After declaring that the work lay "outside of the special line of study" which he "had hitherto pursued", he goes on to mention, among the objects which induced him to undertake it, the following: "in my capacity of linguist I was sensible of the advantage of obtaining a better insight into the forms assumed by the material culture of the East Greenlanders" . . . and concludes: "An exact knowledge of the objects and their modifications will always come in useful in studying a people's linguistic designations of these objects"<sup>1</sup>.

The last sentence is confirmed by the case of the chisel just referred to. The linguist may easily be misled if he does not happen to know the Danish name of the object which he wishes to have named in the Eskimo tongue.

#### AN ESKIMO WORK OF ART.

Among the finest pieces of work in JOHAN PETERSEN's collection is a little double head, carved in wood (THALBITZER's Fig. 356). The one face shows, in a very realistic manner, the typical Eskimo features, while the other reveals the large nose and numerous wrinkles typical of the masks from East Greenland.

The Editor states that the object was found "in a grave in the Ammassalik Fjord" and expresses the opinion that "it may probably have been a memorial image like those known from Alaska (NELSON 1899 pp. 317—319)<sup>2</sup> belonging to a grave and representing the deceased sealer and his wife".

With regard to the reference made to NELSON's work, it should be noted that the objects described by him on the pages quoted are either large figures (the measurements given say 6—7 feet high, whereas the present head is only 11 cm.) or large flat masks, placed side by side on a palisade. The placing of such figures is, moreover, not an ordinary burial custom, but is confined to memorials erected over persons who had met their death elsewhere, and were thus precluded from receiving the usual funeral rites.

<sup>1</sup> Medd. om Grønl. vol. 28 p. 334.    <sup>2</sup> Ann. Rep. of the Bur. of Am. Ethnol. XVIII.

If then, the object in question had been found in a grave, the reference to NELSON's work would not apply. It was therefore thought desirable to look up JOHAN PETERSEN's own catalogue of the collection, and see if perchance the object might have been found beside a grave. The list in question, has, however, neither the one nor the other, but states simply: "Carved head or double mask found by excavation (Udgravning) of an old house in the Angmagsalik Fjord".

In view of the new light thus cast upon the origin of this figure, it will doubtless be best to leave the Editor's theory alone, and content ourselves with appreciating the object itself, as the finest piece of picture work hitherto produced by East Greenland Eskimos.

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### WODDEN DOLLS.

A very considerable number of dolls, differing greatly as to size and manner of execution, have in course of time found their way to the National Museum; as a matter of fact they may be counted in hundreds. It is therefore but natural, that in a work like Cand. THALBITZER's, they should be accorded a chapter to themselves.

With regard to this section there is a good deal to be said.

Fig. 366, for instance, shows a number of small figures there described as "Dolls carved in wood". Here again, however, it must be observed, albeit at the risk of wearying the reader with repetition, that the Editor's eye has been at fault with regard to the material: the dolls marked l. and m. are carved in bone, and are identical with the two shown in Plate XXVIII (left upper corner) in HOLM's original edition, and in THALBITZER's illustration on p. 115 of his English edition of the same work.

The Author commences by observing that the dolls "must be considered in the main as toys but it is possible, that by the grown-up people they were formerly given a significance beyond their capacity as play-things". And in support of this suggestion he quotes "RYDER (1895) pp. 139—140; GRAAH (1832) p. 101".

The reader, wishing to consult the former of these two writers, may look up the List of works consulted. He will there find: "C. RYDER: Om den tidligere eskimoiske Bebyggelse af Scoresby Sound. M. o. Grønland, vol. 17, Kbhvn. 1895". RYDER's work on the subject referred to commences, however, on p. 281; but the same volume of the Medd. om Grønland contains another work of RYDER's, not quoted by the Editor, viz: "Beretning om den østgrønlandske Expedition 1891—92," in which we read, on p. 139—40:

Justitsraad Steinhauer supposed that there was some higher religious significance attaching to the wooden small figures or dolls

brought home by Captain Holm in considerable numbers, (Medd. om Grønland vol. 10, Plate XXVII) as also to the entirely similar ones found on the West Coast during excavation of old Greenlandic graves and sites of houses. True, the natives of Angmagsalik are wont to use, *inter alia*, male and female figures as amulets, which are sewn into the amulet straps worn by the men, or fixed in the hair-knot or fur worn by the women (Medd. om Grønland, vol. 10, p. 118), such figures being also, albeit in highly conventionalised form, utilised for the decoration of sewing-needle skins (Medd. om Grønland, vol. 10, Pl. XXVIII) and for ornamenting various implements, in which cases there is doubtless some fundamental idea as to the figures' affording some protection or advantage to the owner. Such figures are, however, of an entirely different character to the wooden dolls first mentioned<sup>1</sup>), which are generally executed with greater attention to detail and as a rule considerably larger than the amulets, the latter bearing but a suggestion of the human form. The wooden dolls are now used by the natives of Angmagsalik only as toys for children, and both Captain Holm's expedition and we ourselves procured numbers of them by barter, every child having as a rule a little collection. Another feature which further shows that no higher significance is attached to them is the fact that the natives show not the slightest unwillingness to part with them, whereas they are very loth, and in most cases absolutely refuse, to give up their amulets, even for a considerable price. In addition to the dolls carved in human form, the children often had figures of animals carved in wood, representing bears, foxes, dogs and seals. The wooden dolls were always kept together with these figures and the other playthings, and were treated in the same way, the whole stock being sometimes tied together with a strip of sealhide. From this it would seem that the wooden dolls are nothing but playthings"<sup>1</sup>.

And to avoid any possibility of misunderstanding, RYDER further adds:

"The fact of dolls having been found in graves on the West coast proves nothing, it being a general custom among the Eskimos to place in the grave some articles belonging to the deceased"<sup>1</sup>.

It is difficult to understand how these words can be taken as evidence in support of the theory as to a former religious significance attaching to the dolls: we are therefore obliged to have recourse to the other writer quoted, viz: GRAAH. He writes, with regard to some houses and graves on Snedorffs Island, as follows: "In these there lay, together with the usual hunting implements, two human images carved in wood, not unlike those presented to Bering by the savages on the N.W. coast of Ame-

<sup>1</sup> Spaced type by THOMAS THOMSEN.

rica, and which he took to be idols; it is probable, however, that they were not considered on that coast as more or less than in Greenland, where such dolls are only playthings for children"<sup>1</sup>.

This method of quoting — and we have previously encountered some instances of the same thing in the foregoing — renders the book somewhat difficult to read with advantage, as it involves the necessity of having the sources quoted at hand, which, in the case of unpublished works, is for readers abroad an impossibility.

It is not unusual, when at a loss for an explanation, to have recourse to the religious idea; the Author has, however (p. 647) here employed this expedient in such a manner as to preclude all reasonable discussion. "Fig. 368a is a fairly large doll evidently representing a woman in the sitting position without hair top, arms and nose but with nostrils and inlaid eyes in the orbits; the mouth is distended like the mouth of a person playing *uaajeertog* and dark with blood. The doll probably represents some supernatural being and must be considered as male".

Something more in the way of explanation might well have been vouchsafed this remarkable figure. The next one, on the other hand, a perfectly new jointed doll (Fig. 368b) receives an unmerited share of attention. On p. 647 we read: "Is this doll possibly a variety of East Greenland origin? Among the Eskimo living outside Greenland this kind of doll has not been found so far as I know". The last sentence is however, not to be taken as disposing of the question raised, for in a note on p. 681 we find the subject taken up for discussion anew, in the Addenda, included between the descriptive portion and the results. We read here: "Wooden dolls with pliable joints in arms and legs have been mentioned from the Chukchee and Koryaks in north-eastern Asia. There is reason consequently to believe that the same kind of dolls found among the Ammassalikers is an Eskimo product of old origin".

I cannot concur in this view, but should nevertheless be loth to devote further space to the subject were it not that Mr. THALBITZER himself attaches so great importance to it: "This — like many other facts of a similar kind mentioned by me — shows how cautious we must be in considering the apparently surprising agreement with modern objects from our own shops as due to 'European influence'<sup>2</sup>. We have probably here another proof that the Ammassalikers like all other East Greenlanders have stuck tenaciously in their isolation to certain old forms of implements, cult and luxury long after the same things have

<sup>1</sup> Spaced type by THOMAS THOMSEN.

<sup>2</sup> The words "European influence" are set in inverted commas by Mr. THALBITZER himself, presumably indicating his extreme contempt for such a view.

disappeared from the west coast and even from among the western kinsmen on the opposite side of the Davis Straits”.

Why stop at the Koryaks? By a second spring like the first he would reach Greece, and dolls with movable joints were known there, as we are aware, in ancient times. Yet perhaps, after all, it would be better to keep a little closer to the dolls of Greenland. There are over 170 of these from Angmagsalik in the Museum. Of these one only, to wit, that brought back by THALBITZER himself in 1906, which is quite new, has four pairs of movable joints. Seven others, likewise apparently new, are jointed at the knees, to make them “sit down”; all the others are perfectly rigid. Turning to Western Greenland, we find that not one out of some sixty dolls found in old villages and graves has movable joints; such are, however, found in a few figures of recent date, viz. a group of bone figures representing a drum dance<sup>1</sup>, and another group of four dogs in a team.

It seems thus more natural to suggest “European influence”, either as coming direct from Denmark, which is undoubtedly the case with the jointed doll in question, or indirectly by way of the West Coast. It should be borne in mind that the frequently mentioned isolation of Angmagsalik is not to be taken too literally, or rather, that it is of recent date, and artificially created, the foundation of the Danish trading station having prevented the natives there from following their fellows on the southern side of the station down to the colonies of the West Coast. It was not until the close of the last, and beginning of the present century that the southern portion of the East Coast was entirely forsaken, and the isolation rendered complete. During the last century, the products of the West Coast could still find their way up along the East, and much may have reached Angmagsalik in this way.

Mr. THALBITZER himself, by the way, is in other parts of his work not disposed to reject altogether the idea of such influence. He considers, for instance, that the wooden objects shown in Fig. 241 are imitations of an almanack such as that shown in Fig. 392. In this particular instance, however, I am loth to accept the imitation theory, as the resemblance is not very great. The almanack has one hole for each day of the week; of Mr. THALBITZER’s specimens the one has 9 holes of different sizes, the other 23, — of which, however, 7 in the middle line — in addition to which, no such almanack has been shown to have originated from Angmagsalik, the object in question being, as we have seen, from a more southerly part of the East Coast.

As regards the Koryak dolls, by the way, the appearance of these is but vaguely described in the passage quoted from JOCHELSON (THALB. p. 681, Note 2) and no illustration is given. Mr. THALBITZER, moreover, in the same note, compares these with a toy bear from East Greenland

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<sup>1</sup> Labels of the National Museum: East Greenland No. 57.

in the AMDRUP collection. I do not know whether he bases this comparison on personal acquaintance with JOCHELSON's dolls; if so, then they are not made with movable joints, for the bear in question has no movable joints, its legs being merely pegged into their sockets (*vide* THALB. I, p. 534, Fig. 105).

### SHARK'S TOOTH KNIVES AND UMIK CLEANERS.

With regard to the strange knives edged with shark's teeth, Mr. THALBITZER observes<sup>1</sup>: "Shark's tooth knives (Fig. 187) for cutting hair have been mentioned<sup>2</sup> on p. 32. Such knives seem also to have been known in West Greenland in earlier times, for OLEARIUS mentions, that his Greenlanders had some knives, which they called *ekalugsaa*, that is they explained with this word, that the knives were made from sharks (presumably the teeth of sharks)<sup>6</sup>. The teeth are inserted into grooves along both edges, like the small iron blades in the primitive knives we know from northern West Greenland and Southampton Island (see p. 489)". Note 6 runs as follows: "OLEARIUS (1656), p. 174. Illustration from southern East Greenland by GRAAH (1832) Pl. VII".

Glancing first at Fig. 187, we here find two knives shown, and stated by the Author as belonging to the HOLM collection. This is true, however, only as regards 187a, that marked b. being as a matter of fact the very one brought home by GRAAH and mentioned by Mr. THALBITZER in Note 6 as from southern East Greenland (to be precise, from Malingisek, Lat. 62°20' N.); it should be noted, however, that the knife will be found shown in GRAAH's book, not in Pl. VII, but in Pl. VIII.

The reference to OLEARIUS is, like Mr. THALBITZER's earlier quotation of the same author<sup>3</sup>, not altogether correct. OLEARIUS says, in the passage in question, "Ihre Messer seind von Backen Zähnen eines Meer-fisches, welchen sie Ekulugsua, Piso aber in historia naturali Brasilie p. 180 und Jonstonius de piscib. p. 201 Piratia Pua auf Brasilianisch nennen".

The form "welchen" must necessarily refer to "Meerfisch" and not, as Mr. THALBITZER's seems to have read, to "Ihre Messer". Properly construed, the words of OLEARIUS tell us, clearly and distinctly enough, that it is the fish, not the knife, which the Greenlanders called Ekulugsua. He writes the word ekulugsua, not, as Mr. THALBITZER spells it, ekalugsaa, and intends thereby to give the native name for the Greenland Shark (ekalugssuak). Nor is it easy to understand why the Editor, if he had read the passage in OLEARIUS, should find it necessary to advance the

<sup>1</sup> THALB. II, p. 476.

<sup>2</sup> i. e. by HOLM.

<sup>3</sup> vide supra p. 389 ff.



laboriously worded explanation: "that is they explained with this word, that the knives were made from sharks (presumably the teeth of sharks)" since OLEARIUS expressly states that they were made of "Backen Zähnen".

With regard to the closing words of the description: "The teeth are inserted into grooves along both edges, like the small iron blades in the primitive knives we know from northern West Greenland and Southampton Island (see p. 489)" it should be noted, 1) that shark's tooth knives may be single-edged, and 2) that the knives from Southampton Island, are made, not with iron blades, but with stone<sup>1</sup>, as Mr. THALBITZER himself, moreover, correctly states in the passage (p. 489) to which he refers.

We need not, by the way, hark back as far as the 17th century in order to find mention of shark's tooth knives from West Greenland. In 1872, JAPETUS STEENSTRUP, in his treatise "*Sur l'emploi du fer meteorique par les Esquimaux du Groenland*"<sup>2</sup> gave an illustration of a fragment of a shark's tooth knife, found in a grave in North Greenland. GRAAH's statement: "This instrument is also said to have been used in former times on the West Coast"<sup>3</sup> is of less weight, and may possibly be based on his recollections of OLEARIUS.

On p. 677, Mr. THALBITZER again reverts — as he frequently does in the case of other subjects dealt with — to the shark's tooth knives, and observes: "In the British Museum I have seen knives of a similar kind but much longer from the Hawaiian Islands, Polynesia, designated as 'fighting weapons armed with shark's teeth'". Once more, it was not necessary to go so far afield; the National Museum in Copenhagen contains a whole series of similar large shark's tooth weapons from the Gilbert Islands. And in any case, it is not easy to see how the remark bears upon the point in question. It merely tells us, as most ethnographers already know, that sharks' teeth are used for making sharp instruments in some parts of the South Sea Islands. And the Editor admits that the objects to which he refers are not tools, but weapons, and differ considerably in point of size from the Greenland implements. It might further be added that the edge also is different in the two cases, the South Sea Islanders using single teeth, whereas in Greenland a whole row of teeth, still imbedded in the jaw, is used. Nevertheless, since Mr. THALBITZER inserts the remark in a special note, it must be presumed that he considers it of some relevant importance, and finds some connection between the small Greenland knives, edged with rows of teeth, and the large Hawaiian weapons in which single teeth are

<sup>1</sup> FRANZ BOAS: The Eskimo of Baffin Land and Hudson Bay (Bulletin of the American Museum of Natural History vol. XV) p. 384; Fig. 178, "Bone knives with stone blades".

<sup>2</sup> *Compte rendu du congrès international d'anthropologie et d'archéologie préhistoriques*, 6me session, Bruxelles 1872, Pl. 25, fig. 1; cf. p. 248.

<sup>3</sup> *Undersøgelser til Østkysten af Grønland*. Kbh. 1832, p. 85.

used, albeit Hawaii lies some  $45^\circ$  farther south and  $100^\circ$  to the west, no intermediate station being named.

The Author makes frequent use of comparative methods. An instance of this we have already seen in the case of the dolls<sup>1</sup>, and another is furnished by the Editor's treatment of the umiak cleaner<sup>2</sup>. The object in question is an implement some 30 cm. long, consisting of a bear's claw fixed to a haft; we know for a certainty that it is used for cleaning umiaks<sup>3</sup>, and that is all we do know. Nevertheless the following remarks are added: "It is not improbable, that this instrument is useful in certain cases for more than simply cleaning the boat. Turner mentions "boat-hooks" as belonging to the complete outfit of a kayak among the Eskimo of Hudson Bay, used for all purposes of a boat hook and also to retrieve a sunken animal' (seal). It is possible that the Ammassalikers' umiak cleaner is a transformed relict of this instrument".

There does not seem, on the face of it, to be any very great probability that this little tool, used for cleaning, and belonging to the umiak, should be a relict of a boat hook appertaining to the kayak. And TURNER's description does not incline one the more towards Mr. THALBITZER's opinion.

TURNER begins by stating the length as about 8 feet, whereupon he describes the implement as follows: "The lower end of this has a strong hook made of stout iron set into it. Along the inner edge of the wooden shaft two or three notches are cut. The end near the person has a V-shaped notch cut into it . . . . A weight is attached to near the hook end to keep the shaft perpendicular in the water. A line of sufficient length is attached to it".

Clearly, the implement has in process of transformation, apart from shrinking to an eighth of its former size, and being relegated from the kayak to the umiak, lost not a few of its originally characteristic features. A series of intermediate stages, showing the transition, not only in form, but also in purpose, would not be out of place.

True, Mr. THALBITZER here expresses himself but cautiously; "it is possible" "it is not improbable", yet the manner in which the term "boat hooks" is placed as an alternative designation at the outset — the heading runs: "Umiak cleaners (p. 43, cf. fig. 83) — or boat-hooks?" — gives the effect of something more than a casual suggestion, and the Author's belief in his hypothesis increases as the work goes on; thus on p. 728 we find, among the implements or forms of same peculiar to Angmag-

<sup>1</sup> vide supra pp. 402—403.

<sup>2</sup> THALB. II, p. 380, fig. 83. The reader will doubtless not be surprised to learn that not both of the umiak cleaners shown in fig. 83 belong to the HOLM collection. 83a was brought over by Mr. THALBITZER himself in 1906.

<sup>3</sup> HOLM (Medd. om Grønland, vol. 10). Pl. XXVI, fig. b; cf. the text.

salik, "boat hooks (umiak cleaners)". It will be noticed that the term "boat-hook" is here accorded the principal place, while "umiak cleaner" is packed away in a parenthesis with inverted commas.

### HARPOONS.

With regard to the East Greenland kayak harpoon, Mr. THALBITZER writes, on p. 411:

"I may refer to G. HOLM's description here p. 46 and to O. MASON's detailed description, which like his other studies on the Aboriginal American Harpoons, is very instructive.

On only one point in MASON's account is a correction necessary. In his description of the East Greenland harpoon he states: 'The foreshaft<sup>1</sup> is in this specimen a cap of ivory, squared off on top, and the middle left projecting for the socket on the base of the loose shaft'<sup>2</sup> (l. c., p. 238)<sup>3</sup>. According to this the loose shaft would have a socket on the basal surface, covering a corresponding projection on the top of the foreshaft. The same explanation is repeated in describing a second example from South Greenland and his illustration of this part of the harpoon (fig. 49 in MASON) shows the same peculiar feature. It is probably based on some mistake. The condition in all the Greenland harpoons, which I have seen, has always been that the tenon (or projection) was on the base of the loose shaft and the socket on the flat top of the foreshaft. There is some doubt, as to whether MASON has described his own specimens correctly on this point. In the first place it is unusual, that the two Greenland harpoons, he describes, should differ from the Greenland type known elsewhere; in the second place, there is a contradiction in MASON's description. On the same page, namely, where he describes the foreshaft erroneously (p. 238) he explains, in full agreement with the usual type of Greenland harpoon, that the loose shaft has a 'flat surface at the base, with a projection in the middle, fitting into a cavity on the front of the foreshaft' and his drawing of this harpoon (Pl. 4) is accurate and correct. It thus appears, that through forgetfulness he has given an erroneous description of the ball-and-socket joint which he had described correctly on referring to the loose shaft".

And in a note, we read: "In F. NANSEN's "Eskimoliv" (1891) p. 31 there is a drawing of the front end of a harpoon, which, though indistinctly, shows the same error in confusing the loose shaft and foreshaft. NANSEN is cited by MASON (l. c. p. 240)".

<sup>1</sup> By this MASON understands the bone part in the fore-end of the harpoon shaft.

<sup>2</sup> By loose shaft is meant the piece of bone between the shaft and the head.

<sup>3</sup> O. T. MASON: *Aboriginal American Harpoons*. Washington 1902.

For convenience of comparison, MASON's two illustrations are here shown in Fig. 3—4.

The Editor is right in saying, that MASON, after giving a perfectly correct description of the loose shaft, and describing — likewise correctly — the foreshaft in this specimen as having a projection, incorrectly adds: "for the socket on the base of the loose shaft". Even the uninitiated reader will at once see from the illustration that the description is incorrect only in this one point (Fig. 3).

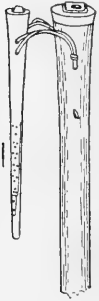


Fig. 3.  
(After O. T.  
MASON:  
Aboriginal  
American  
Harpoons  
pl. 4).

Had Mr. THALBITZER stopped at this, all would have been well. Not content however, with challenging the description of the East Greenland harpoon, he goes so far as to include the South Greenland also (Fig. 4). In this case, however, MASON's description will be found to be in entire agreement with his illustration, which suggests the possibility of Mr. THALBITZER's having misunderstood the passage, the more so, since we are told that FRIDTJOF NANSEN gives a drawing "which, though indistinctly, shows the same error in confusing the loose shaft and the foreshaft".

Might it not now be worth while to look closer into the matter, and see if possibly Mr. THALBITZER himself may be in error? It will soon be realised that the main point lies in the sentence about the two Greenland harpoons which are said to "differ from the Greenland type known elsewhere". "The Greenland type as known to the Editor" would have been more correct. As a matter of fact, Fig. 3 is from East Greenland, whereas Fig. 4 is from the southern part of West Greenland, NANSEN's specimen being presumably from the Godthaab district.

Mr. THALBITZER declares that all the Greenland harpoons he has seen have always had "the tenon (or projection) . . . on the base of the loose shaft and the socket on the flat top of the foreshaft".

Strange, that with all his journeyings in search of information, — to Berlin (1904, 1907 and 1912) to Vienna (1908) to Christiania (1908) to Stockholm (1908 and 1910), London (1909) and Dublin (1909)<sup>1</sup> he should never have come across harpoons of the other type. I do not know what the Museums of these cities may have to show in this respect; I can, however, refer Mr. THALBITZER to the series of 10 harpoons and 6

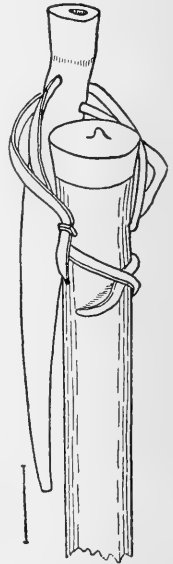


Fig. 4.  
(After O. T.  
MASON: Ab-  
original Ameri-  
can Harpoons  
fig. 49).

<sup>1</sup> THALB. II, p. 328.

lances preserved in the West Greenland section of the National Museum at Copenhagen, which somehow appear to have escaped his attention<sup>1</sup>.

A peculiar form of harpoon is used by sealers hunting in couples on the ice. This weapon is called by HOLM the Ituartit harpoon<sup>2</sup>, which term was generally accepted until Cand. THALBITZER in 1909 chose to style it the "Ituartin" harpoon. Here obviously the linguist must be right, and those unversed in the Greenland tongue had perforce to recognise the new name. In 1914, however, with the publication of Mr. THALBITZER's work, complications arose. We here find, on p. 422, among "Technical names", the "ittuarten, itciarten harpoon"; the Editor does not, however, restrict himself to these technical terms, but uses also "ituartit harpoon" (p. 409; p. 412), "ice sealing harpoon (ittuarteq)" (p. 421; p. 433) and "ittuartin" (p. 420). Disregarding the phonetic spelling, and overlooking the difference between one "t" and "tt" as immaterial, we have still four different terms remaining. That all four are current and correct we do not venture to doubt, since the linguist uses them indiscriminately, and we may rest assured that there is some valid linguistic reason for the fact that only two of them are included under the heading "technical names". The ordinary reader, however, not being a linguist, comes to a standstill here, with the obvious query: "What am I to call the thing?" I for my part have thought it safest for the present to keep to the term originally given by HOLM: "Ituartit".

In his paper published in 1909, Mr. THALBITZER haled forth from the Stockholm Museum a couple of ordinary West Greenland tow-line toggles, which he showed in illustration as points of ituartit harpoons<sup>3</sup>; in 1914, however, (p. 433) he makes reparation for the error in the following words: "The whole form of the weapons, however, makes this

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<sup>1</sup> The young Danish ethnographer, KAI BIRKET SMITH, has already, in a lecture delivered to "Det Grønlandske Selskab" referred to this point as "one of the inaccuracies which have crept into the description of Kommandør HOLM's collection recently published by the linguist WILL. THALBITZER". Hr. BIRKET SMITH's studies in South Greenland, and among the collections in the National Museum, had shown him that Mr. THALBITZER was but imperfectly acquainted with the Greenland harpoon. He was also aware, moreover, that the East Greenland form was derived from the original type, whereas that shown in fig. 4 is a variant which later made its appearance on the West Coast. He did not, however, — as far as can be judged from the text of the lecture as published in *Det grønlandske Selskabs Aarsskrift*, 1912 — perceive that MASON's illustration of the East Greenland harpoon agreed with the form of all other East Greenland harpoons, and that it was only in his description that any inaccuracy existed. Since the above was written a correction has been made in the text of the lecture as published (*Det Grønlandske Selskabs Aarsskrift*, 1914, p. 62).

<sup>2</sup> *Medd. om Grønland*, vol. 10, p. 78 and THALB. II (i. e. HOLM) p. 51.

<sup>3</sup> THALB. I, p. 501.

explanation improbable" — which honest admission is in perfect accord with the fact.

But Mr. THALBITZER does not stop here. He goes on to say "it is curious to find a bone implement of precisely the same construction, a towing or drag toggle, which is also stated to be in the Stockholm Riksmuseum, namely in A. E. NORDENSKIÖLD's collection from Alaska, (the Vega Expedition)". Once again, we are led by the longest way to no advantage. The new result is based on a single specimen only, and the expression "stated to be" suggests that the Editor has not even seen this one himself. Had he cared to look through the West Greenland section of the National Museum, he would there have found a number of such "curiosities" whereby the error might have been avoided, and Mr. THALBITZER himself spared the necessity of making the new admission: "The hinged toggle has thus obtained here quite a different use from that we know in East Greenland, but the construction of the head is also of quite a different form".

The only point of similarity now remaining is thus the fact that in both cases two pieces of bone are joined together by means of a peg about which they can turn; this can, however, scarcely be regarded as a sufficient basis upon which to determine the class to which an implement belongs.

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### CONTENTS LISTS OF THE COLLECTIONS.

Pages 322—23 and 743—53 of the work are devoted to lists of the contents of some collections. The reader will naturally expect the collections in question to be those mentioned on the title-page of the book: as "Ethnographical collections from East Greenland, (Angmagsalik<sup>1</sup> and Nualik) made by G. HOLM, G. AMDRUP and J. PETERSEN and described by W. THALBITZER". This is, however not the case. Of the collection on which the whole work is based, to wit, HOLM's, no list is given; the Editor of this English work refers his readers to the Danish edition of HOLM's book, which according to the Editor's own statement, is out

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<sup>1</sup> On the title-page of this section Mr. THALBITZER writes "Angmagsalik" according to KLEINSCHMIDT's orthography; on the page following, however, (p. 321, Note 1) he asserts that "the East Greenland form of this name is Ammattalik or Ammattaling". It might perhaps have been reasonable enough to have introduced one or other of these latter forms; it is less easy to realise, however, upon what grounds the Editor has, in the text of the work, supplanted the traditional form Angmagsalik by the term Ammassalik, which, according to the linguist himself, is the phonetic form of the word as used in the dialect of central West Greenland.

of print. Nor is there any catalogue of JOHAN PETERSEN's important collection. Of the three mentioned on the title-page, then, we find but one, viz, the AMDRUP collection, this being, however, accorded two lists: a brief classification on pp. 322—23, and another at greater length on pp. 743—52, both of which include, not only the objects from Angmagsalik and Nualik as stated on the title-page; but also the finds from the country farther to the north, which have already been treated by the Editor in his work of 1909, and of which an English catalogue already exists<sup>1</sup>. In lieu of the HOLM and JOH. PETERSEN collections, we are given a list of THALBITZER's collection.

The reader might, however, after all manage well enough without the missing lists, were it not that Mr. THALBITZER in the text of the work (p. 548) refers to some numbers in the one of them, for it must be admitted that catalogues reduced to such a degree of brevity as is evidenced by the following instances: "No. 36—38. Wooden plates and a spoon" or "No. 99—100 Sundry objects (plaited sinew threads etc.)"<sup>2</sup> can be of no value, and should certainly never have been included in a scientific work.

As regards the AMDRUP collection, we need here only concern ourselves with the lists of finds from the north, and will, for the sake of convenience, designate these as List I (THALB. I, 540—42), List II (THALB. II, 322—23) and List III (ibid. 743—52).

Far simpler would it have been had Lists II and III been given as reprints of List I, but in revised form, and with the corrections distinctly indicated. The three lists as they stand may easily give rise to doubt and misunderstanding.

List II may, on account of its extreme brevity, be disregarded; it is, however, in some respects preferable to List I, which includes only numbers up to 113, whereas the references in the text of the work go up to 121<sup>3</sup>. This incompleteness is corrected in List II, which brings the items from Cape Borlace Warren and Sabine Island up to No. 119, and even adds: "120—194 Finds from uncertain place north of Ammasalik". In List II we read "Skærgaards "Peninsula", whereas I and III have "Skærgaardshalvo"; all three lists however, agree in stating the latitude of the place as 68°07', in contrast to the text, (THALB. I, p. 386) which gives it as 68°.

The uncertainty as to the size of the AMDRUP collection arising from the fact that List I gives numbers up to 113, Lists II and III up to 194, is further increased by an article of the Author's in *Geographisk Tidsskrift*<sup>4</sup>, where the number is stated as over 300.

<sup>1</sup> THALB. I, pp. 540—42.

<sup>2</sup> THALB. II, pp. 752—53.

<sup>3</sup> THALB. I, pp. 495—99 and pp. 533—34.

<sup>4</sup> Geogr. Tidsskr. vol. XX, p. 215.

If we now proceed to compare Lists I and III, we find, in the figures alone, a series of other discrepancies calling for correction.

Inv. No.	List I	List III	
45	Fig. 21	Figs. 22.	List I is here correct.
53	Fig. 26	Figs. 26 and 28	} List III is here correct.
55—56	Fig. 29 a and b	Figs. 29 and 33	
86	Fig. 55	Figs. 55 and 561	{ should be: Figs. 55 and 56, p. 472 (No. 56 appearing twice in the same work).
87	Fig. 56	Fig. 562	Should be the second Fig 56, on p. 476.
90—95	Fig. 58	Figs. 58—60	List III is right,

two of the animals shown in Fig. 58 having turned out badly in the reproduction, wherefore they are shown again in Figs. 59—60. In Fig. 58, Mr. THALBITZER has altered the position of one of the animals, from the erect to the prone. The natural course in such a case would have been to remove the figure incorrectly reproduced, and replace it by the amended illustration; Mr. THALBITZER, however, has preferred to let the prone beast lie, and makes it the subject of the following passage:

“As all the animals just mentioned are rendered in a very lifelike manner in the carvings, there are no grounds for supposing that the sixth, *inv. AMD. 95*, should not also give a faithful representation of some animal or other. However it is by no means easy to identify it. It cannot be any kind of seal, as it has no swimmers, and the shape of the head with the small pointed ears is very unlike that of a seal. The imagination recoils from conceiving it as a land mammifer. And yet we have no other recourse, and we shall discover, to our surprise, that the realistic sense of the Eskimo has not failed him this time either. The drawing fig. 60 shows how the figure is to be conceived; not with the head in front and the tail behind, but with the head erected: a polar bear walking on its hind legs”.

We may pass over the twenty further lines of print through which Mr. THALBITZER continues his explanation of the same figure, it should be observed, however, that the realistic execution of the object in question is not so great but that another scientific opinion pronounced it a hare. I leave the question open to the judgement of zoologists.

Turning now to discrepancies of another order, viz. in the classification of the objects themselves, we find, apart from minor differences of style, such instances as the following:



Inv. No.	List I	List III
31	Bodkin, or marline spike, of bone.	Bodkin-shaped wound plug of bone.
33—44	Bodkin and needles.	Bodkins.
55—56	Drum handles, 2, of bone.	Two handles of bone with finger-rests.
62	Wooden handle.	Handle-like object (cross piece of a bladder float?).
72	Wooden hammer-like implement (blubber-beater?).	Hammer-like implement (maul) made of a crooked branch.
80	Wooden handle of a skin-scraper.	Womans knife (scraper).
97	Fragment of a wooden implement.	Head of a wooden implement (fragment of a snow beater).
99	Shaft-like fragment of a wooden implement.	Handle part of a wooden implement (snow beater or blubber beater).
104—105	Miniature foreshafts of harpoons, 2.	Foreshaft like fragments (or toy harpoons?).

Such inconsistencies cannot but create a feeling of uncertainty in the mind of the reader. Have we here, as in the figures above referred to, but a series of errors due to negligence? Have the words "and needles" under 33—44 merely been omitted in List III? Or is the "wooden handle of a skin-scraper" a totally different object to the "woman's knife (scraper)" of List III, which must thus have crept in through some accidental error?

The answer to such queries is in the negative. The difference in terms is due to the change which the Author's opinion regarding one and the same object has undergone in course of time. An instance of this is furnished by Nos. 55—56. In his work of 1909, Mr. THALBITZER treats of these two objects, and comes to the result that they are drum handles, and further that they are the earliest finds of this type and material made in Greenland<sup>1</sup>. As to the features which the Editor here has regarded as of decisive importance, this may be seen from the following passage<sup>2</sup> referring to one of the specimens: "The drum-handle type, however, is unmistakable; we see the finger-rests and the remains of the knob-like head". These, however, would hardly appear to be the distinguishing marks of a drum handle, if we may judge from the difficulty which Mr. THALBITZER experiences in determining how the drum is fixed to the handle. After having devoted nine lines of print to the discussion of the question as to which end of the handle should be fixed to the frame of the drum, he concludes: "I feel convinced that it is the broad end of the handle which carried the drum, though I am not clear as to the mode in which it was secured"<sup>3</sup>.

<sup>1</sup> THALB. I, pp. 412—17.

<sup>2</sup> THALB. I, p. 417.

<sup>3</sup> I. c., p. 416.

This last is not surprising, since the handles in question lack just that very notch into which the frame of the drum is inserted. The notches for the fingers merely prove that the object was intended as a handle of some kind or other, and the knob at the one end clearly indicates that the man who made it had here finished off his work in such a manner as to preclude the fastening of drum or any other instrument to that end at least.

By 1910, Mr. THALBITZER had realised the fact that this notch was lacking. In *Geogr. Tidsskr.* Vol. XX, p. 218, he tells us: "These hafts somewhat resemble drum handles, which are cut in the same manner in Alaska; both lack, however, it is true, the notch at the broad end into which the wooden ring of the drum is generally set and lashed, so that the explanation must be regarded as doubtful, unless supplementary finds should subsequently be made".

On p. 223 of the same work, we read "The two bone handles . . . (presumably drum handles) . . . are carved as if from the same model as a quiver handle shown by BOAS<sup>1</sup>, from Vantissard Island". Here again however, it must be observed that the resemblance lies in the finger notching of the grip, the value of which as a distinctive feature of the drum handle generally is thus reduced, since they may equally well be taken as characteristic of quiver handles. Mr. THALBITZER has now discovered what is lacking in the two objects in question; he has not, however, as yet been able to see the distinctive attributes which they do possess, viz. a hole at the one end for the insertion of a blade, and an oblique boring at the other intended to receive a thong, two well known features in East Greenland knives.

In 1914 (THALB. II, p. 640, Note 5) we are brought somewhat nearer the truth: "They have possibly been knife-handles, not drum-handles". Thus from the "unmistakable drum-handles" of 1909 via doubtful drum-handle and quiver handle (both in the same paper 1910) we are at last, in 1914, brought within view of the actual fact; the Editor is careful, however, to leave a pathway open in case any new hypothesis should arise.

Without some kind of commentary, the reader will find serious difficulty in discovering what lies beneath such change of names, unless he happen to be particularly familiar with Mr. THALBITZER's published works, already of considerable extent. It may even at times be difficult enough to make List I agree with the accompanying text; it is not immediately obvious, for instance, that the object cited in List I as a "wooden hammer-like implement (blubber-beater?)" is identical with that treated in the text as forming part of the framework of an umiak. We cannot however, here undertake to guide the reader point by point through the

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<sup>1</sup> Bulletin of the American Museum of Natural History, vol. XV, p. 420, fig. 219 e.

list. One or two other instances of metamorphosis will be mentioned later on; for the present, we may proceed to consider the catalogue of the second collection, viz. THALBITZER'S.

When Cand. THALBITZER in 1909, on behalf of the Committee for the Investigation of Greenland, handed over the collection to the National Museum, it was accompanied by a catalogue drawn up and signed by the collector himself, marked "Copy" and dated Copenhagen 1907, with a further note: "Delivered to the National Museum 19 12 1909, W. T."

This list does not altogether agree with the one now published; it did not, by the way, altogether agree with the contents of the collection as delivered to the Museum. And in view of the fact that a published list, if allowed to pass without remark, might well be regarded as involving an obligation on the part of the Museum to produce the objects therein cited when called upon, it will be necessary to make some corrections.

List. No.

- 6—10. The two lists agree, but 6 specimens were received.
- 47—50. "Two masks carved of wood". There were three (L. 4853—55).
- 55—67. "Dolls dressed in skin clothes". These 13 numbers were noted in the list as "abt. 12". There were however 21 (L. 4858—77 and L. 4899).
- 71—88. "Various toys (nodding or pecking birds, puzzle with movable beads on a string, buzzes, ajagaq, tops, balls)". In the list delivered to the Museum these 18 numbers are represented by the following: Two toys (noqqataait) (L. 4912—13)<sup>1</sup> 2 ditto birds (L. 4909—10) 4 wing buzzes (imittitwaain).<sup>2</sup> One ajagaq game (L. 4911) — 3 tops (There were four: L. 4903—06). Three balls (L. 4916—18). One toy with two beads (puzzle) (L. 4945). Thus the published list gives 18 articles, the list delivered to the Museum 16, whereas the actual number received was 15. To these should be added, however, one object not noted on the list delivered, viz; a jumping animal (L. 4919) so that the Museum also received 16 pieces in all.
- 89—98. "Images of animals carved of wood or ivory". This lot is noted in the delivery list as "Various animals carved in wood" i. e. not in ivory. Fifteen of these were delivered to the Museum, not 10 as stated in the published list.

<sup>1</sup> Similar to that shown in Fig 376c as "bull roarer". The Eskimo name is not stated here, as in the case of the other toys, so that the List delivered to the Museum furnishes new information on this head.

<sup>2</sup> The original 2 in the list had been altered to a 4; there were, however, but two: L 4907—08.

99—100. "Sundry objects (plaited sinew threads etc.)". The sinew thread is now marked No. L. 4947. The "etc." presumably refers — although only one number is allotted — to various small objects not noted in the list.

In addition, the list delivered also mentioned "One dust cleaner" that is to say, an umiak cleaner, or as Mr. THALBITZER prefers to call it, a boathook, this being the very one shown in Fig. 83a p. 380 of Mr. THALBITZER's work (L. 4940). Further, two dolls are also mentioned, representing men on ski, (L. 4900—01); these are not included in the published list. The Museum has also received 1 drum (L. 4857), 5 undressed figures (L. 4878—82) including one jointed doll (*vide* p. 403) and four bone beads (L. 4949—50) which articles are not mentioned either in the list delivered to the Museum or in that now published. Finally, to complete the references made in the work to illustrations there given of objects in the collection, the following numbers, with those of the figures corresponding should be added:

12 (Fig. 152c), 13 (Fig. 186a), 24 (Fig. 253e), 25—35 (Fig. 253i), 36—38 (Fig. 285f and g), 43—44 (Figs. 321f and 322b), 46 (Fig. 324b), 52—53 (Fig. 180b) and 71—78 (Fig. 378a).

Among objects shown in the illustrations but not mentioned in the published list, we have also: One Umiak cleaner (Fig. 83a) beads (Figs. 343a and b) and 1 drum (Fig. 360a).

Mr. THALBITZER evidently attaches considerable importance to his collection, since he has seen fit to include a catalogue of the same in his work, at the expense of HOLM's and JOHAN PETERSEN's, which are of far greater value; it would therefore be reasonable to expect that the catalogue given should be correct. The collection was not delivered to the Museum until three years after his return from Greenland; and one might suppose that he would thus have had sufficient time to make himself fairly well acquainted with the material which he had brought over. Nevertheless, his illustrations show no less than 15 objects from this, his own collection, here attributed to others. Had he wished to refresh his memory, or to fill up possible lacunae in his notes, he could at any time have inspected the whole of the material at the Museum. The most correct method of proceeding would have been to draw up a list from the records of the Museum, or at any rate, to make sure that the list to be published agreed, either with the contents of the collection as preserved in the Museum, or with the list which accompanied it on delivery. The third list which now appears in his work serves no good purpose; rather, indeed, the reverse.

## CONCLUDING REMARKS.

We have in the foregoing considered various typical instances of Mr. THALBITZER's peculiar methods of dealing with museum material and with such sources of information as are afforded by previously published works. We have seen that he is not always thoroughly familiar with the subjects of which he treats, and that his lack of proper qualification in this respect also makes itself apparent in his new edition of HOLM's work, included in the same volume; that he is apt to be remarkably inaccurate in quoting his authorities, and inclined now and then to formulate far-fetched conclusions on the basis of inadequate observation.

All questions such as might form the subject of scientific discussion have been purposely omitted here, only indisputable errors being dealt with. Mere inaccuracies of the mental process and of exposition have also been passed over. By way of illustration, and to save the reader, if possible, from overmuch pondering upon obscure passages, a single instance of the Author's style may here be given.

With regard to Capt. AMDRUP's find of the so-called "dead house" at Nualuk, we read, on p. 323; "The objects found were first brought by boat down to Ammassalik, where several of them were recognised as belonging to a man, who with some other families had journeyed northwards two years previous to HOLM's arrival, without anything being heard of the whole party later. The circumstances attending the discovery indicated, that the natives (over 30) had been overcome by a catastrophe, hunger or more probably poisoning from rotten meat".

And immediately after: "They had not gone much more than 80 miles from their tribal relatives, which agrees with the fact, that the ruin found was of recent date in its appearance. Although the collection found in the ruin originated from the time before the arrival of Europeans, the contents showed distinct signs of an indirect connection with European culture". (Here follow some examples). "In other respects, it confirms in every way the typological characteristics of the Ammassalik culture, which we knew from the HOLM collection. For example, there is a precise agreement between the forms of the harpoon heads in the two collections, so that we become convinced, that the types of harpoons, contained in the HOLM collection, had been fixed and predominant in this region probably for many generations".

It is not easy to see why the harpoon heads carried by a man setting out from Angmagsalik in 1882 should be expected to differ in any essential degree from those obtained by HOLM at the same place in 1884.

The sentence: "They had not gone much more than 80 miles from their tribal relatives, which agrees with the fact, that the ruin found was of recent date in its appearance" likewise furnishes food for thought. It would surely seem obvious, that the farther the party went, the later

would they build, and the newer would the resulting house appear, while on the other hand, the shorter their journey, the earlier — and older — their house.

I find some difficulty also, in accepting, as does Mr. THALBITZER, the resemblance between the harpoon heads of 1882 and those of 1884 as proof that the types "had been fixed and predominant in this region probably for many generations".

In the foregoing, I have sought to point out instances of the various difficulties which the scientific enquirer is liable to encounter, and to emphasise the need of caution in the face of errors and inaccuracies which might otherwise prove misleading. To go through the whole of the work would demand a disproportionate amount of space. For further convenience, a list of some two hundred and fifty corrections, embracing 385 pages of the book (pp. 369—753) is given in the following, arranged in order of page numbers, with references to the foregoing in such cases as have been dealt with already. Even this list, however, can make no claim to completeness.

Yet with this we might well conclude, had it not been for the fact that Mr. THALBITZER has endeavoured to make the National Museum responsible for the quality of his work. An accusation of so serious a nature cannot be allowed to pass unrefuted. It has been pointed out in the foregoing, and — albeit the fact would seem obvious enough in itself — may here be repeated, that Mr. THALBITZER had every opportunity of studying the entire contents of the Museum as closely and as frequently as he might wish, and that he would, on application, have been furnished with every information obtainable from the records of the Museum. He has also formerly availed himself of these opportunities, as may be seen from p. 658 of his work. It has also been shown (pp. 385—93) that Mr. THALBITZER's method of work when dealing with written or printed sources of information entirely resembles his treatment of museum material. Further proof will be afforded by a glance at the manner in which he handles such material when undisturbed by such hindrances as he claims to have met with in the Museum, and at the results which he attains by such study.

We may take, for instance, a couple of examples from his work on the first part of the AMDRUP collection<sup>1</sup>. Mr. THALBITZER had here, as he himself tells us, the objects in question laid out before him all the time on a table in one of the rooms of the Kgl. Danske Videnskabsnernes Selskab. And as another point in his favour, we may choose out examples from the first chapters of the book, comprising 1) harpoon heads, 2) other weapon heads made of bone and 3) stone implements. At the conclusion of these sections, the Editor himself informs

<sup>1</sup> Medd. om Grønl., vol. 28, p. 329 ff. (i. e. THALB. I).

us that he has "treated of three kinds of Eskimo implements which have hitherto been the object of particular attention on the part of ethnographers"<sup>1</sup>; he has thus had the work of other writers as a guide if needful. As regards the remainder, he has not had the advantage of such aids, and restricts himself also to a merely geographical arrangement of the material.

It is only fair to remark that these chapters are at least richly illustrated; 6 out of the 9 harpoon heads shown are shown three or four times each. This does not mean that they are presented from as many different points of view; the difference is in several instances restricted to the background, which is in one case white, in another black; the white makes the better picture. In Fig. 14, p. 381, we have a flake of stone, seen from two sides, concerning which the Editor observes in the text: "The specimen shows no trace of polishing or finishing so that it is uncertain whether it is an artefact at all, and whether it has ever been in use".

These sections are further marked by a strictly systematical order, almost too strict, perhaps, at times, as when we find, in Fig. 13 p. 381, under "Stone implements" the blade of a woman's knife, the remaining portion of which is given in Fig. 21 p. 403, in the geographically arranged part of the book.

On p. 347 we are told, with regard to one of the harpoon heads from North-East Greenland, that it "resembles very much a West Greenland type of harpoon head" in proof of which the Editor quotes SVENANDER<sup>2</sup> 40, Fig. 4. The resemblance to the illustration in question is certainly striking; SVENANDER tells us, however, expressly, on the opposite page (p. 41), that Fig. 4 represents one of the objects collected by Dr. HAMMAR in North-East Greenland. The resemblance is thus rendered less remarkable, and the connection with West Greenland disappears. With regard to this same harpoon head, we are further informed that the blade "as is "(sic) "seems, was also wedged into the slit with small pieces of iron".

Here again, I am unable to concur in Mr. THALBITZER's opinion; the present appearance of the object is due to splitting of the metal through the action of rust, a phenomenon very generally known.

The fragments from a tow-line, presented in illustration as points of Ituartit harpoons, have been dealt with in the foregoing: it only remains to add that the Editor might have avoided this, as well as other errors, if he had been content to keep to the matter in hand, instead of dragging in extraneous museum objects. And if Mr. THALBITZER had omitted the passage on p. 448 to the effect that the Norwegian ethno-

<sup>1</sup> THALB. I, p. 386.

<sup>2</sup> GUSTAF SVENANDER: Harpun-, Kastpil- och Lansspetsar från Väst-Grönland. Uppsala och Stockholm 1906 (Kungl. Vetenskapsakademiens handlingar Band 40, No. 3).

grapher Dr. O. SOLBERG "does not mention the three bone heads of adzes in PFAFF's collection in the Riksmuseum at Stockholm" no one would have suspected what we now know to be the case, that Mr. THALBITZER was ignorant of the fact that an Eskimo adze-head is not bored to receive a haft, or cut away obliquely at the hinder end with socket at same. In other words, he would have spared himself the embarrassment of confusing an adze-head with the head of a whaling harpoon — and the harpoon head in general is a subject to which he devotes especial attention.

Mr. THALBITZER is hardly more fortunate in his determination of the object shown in Fig. 8 of his work. The illustration shows it as an arrowhead: the text accompanying it, however, does not lead the reader to any definite conclusion. "I have not been able" we read, "to find either in MASON, MURDOCH, or NELSON any arrow the head of which resembles this specimen from East Greenland". Arrowheads from Boothia, King William's Land and Alaska are then discussed, until we come to the following: "However, among the numerous varieties of bone arrows in the National Museum at Copenhagen there are several which resemble that treated of here pretty closely". SOLBERG is quoted in support of this; but even now, the Editor is not satisfied with the result, and goes on to say: "It is, however, by no means out of the question that we have to do with the head of a bird-dart". Some space is then devoted to the consideration of various objects which SVENANDER rightly states are not bird spear heads, after which we are shown an illustration of the true head of this weapon; the specimen shown is, however, as widely different from AMDRUP's as well may be. I leave it to the reader himself to judge of these two objects and the accompanying text; it would be waste of time to devote further space to the subject here.

The object in question is, then, finally shown to be the head of a bird dart? No! not altogether. "Another, though less probable, supposition is that this bone head may have been used as a salmon spear, for fishing on the ice; cf. NELSON (Alaska)". We are then told of a spear from the Gjøa collection, intended for "salmon-spearing from a kaiak"; these spears are, however, according to Mr. THALBITZER's own words, furnished with detachable point. And in conclusion, we read: "However, as *inv. Adm. 17* is not arranged so as to form a detachable fore-piece, it is not quite justifiable to compare it with these western fish-spears, especially, as fish-spears with detachable heads, as far as I know, are not known from any district in Greenland".

And here the discussion closes, somewhat, no doubt, to the reader's relief, since each new hypothesis, as the Editor himself admits, has proved more improbable than the one before. It would perhaps have been more considerate had Mr. THALBITZER expunged the hypotheses which did not satisfy himself before sending the manuscript to print; it seems, however, that he is afflicted with a habit of thinking aloud, for we en-



counter the same thing in the case of the next figure (Fig. 9) here reproduced for the sake of convenience as Fig. 5. With regard to these bone heads we are told: "At first sight they look like weapon heads, but *what* kind of weapon heads? They cannot have been detachable, loose, harpoon heads<sup>1</sup> belonging to the common sealing harpoons, or *agdligak* harpoons, or to the somewhat heavier walrusing harpoons; against both these possibilities militates . . . etc.". And again "They have no slits for blades, and thus cannot have been the fore-pieces of sealing lances. Nor do they look like the fixed bone heads of bird darts; a partial resemblance to the head of an arrow from Alaska . . . must be regarded as a coincidence. On the other hand, the resemblance of these heads to the firmly secured bone heads at the end of whaling-harpoons of the type known from Alaska and from Baffin Land, is unmistakable. But a remarkable point about them is their small size, which might lead one to suppose that they were only used as toys, or as models for boys to practise with".

The discussion of these weapon heads in 1909 has, at least, one advantage over the treatment of the arrow heads, to wit, the fact that it ends with a definite result. In Mr. THALBITZER's work of 1914<sup>2</sup>, however, where the same articles are dealt with, we read: "In my earlier description of AMDRUP's finds from northern East Greenland I identified two cylindrical bone points from Cape Tobin as, miniature bone fore-pieces of whaling harpoons'. It seems more correct to regard these as fragments of ordinary loose shafts intended to be spliced together with thicker (lower) parts of the shaft, which are wanting. They should thus be called, fragmentary fore-pieces or loose shafts for harpoons'. These spliced bone shafts are extremely common at Ammassalik".

The Editor has himself spent some time at Angmagsalik, and has there, as he informs us, had opportunities of acquiring first-hand knowledge of the implements. The reader cannot, therefore, hesitate to believe that the front portion of these spliced foreshafts is of the form shown in Fig. 5, viz; 1) having a hole in front of the oblique surface, and 2) lacking the holes opposite the oblique surface through which the two pieces of the foreshaft are nailed together. As matters stand, however, I for my part venture to opine, until the contrary is proved, that these pieces must be formed after the manner of that shown by Mr. THALBITZER in Fig. 119a<sup>3</sup>, i. e. with holes through the obliquely cut portion by means of which the two parts can be firmly joined together, but without



Fig. 5.  
1/2.

<sup>1</sup> "Loose shafts" is probably was is meant.

<sup>2</sup> THALB. II, p. 416.

<sup>3</sup> THALB. II, p. 421.

any complete perforation above, which also agrees with the specimens of this nature preserved in the Museum (cf. Fig. 6), whereas none of the alternative construction have been brought over as yet. If this be the case, then we are still without a final conclusion of the discussion regarding Fig. 5. And if I may be permitted to offer a hint, I would suggest that Mr. THALBITZER in his next work should consider the possibility of ice harpoons.

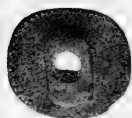


Fig. 6.  $\frac{1}{2}$ .

The instance above quoted will doubtless suffice to show that the treatment of the material, and the results arrived at, are very similar to what we find in the author's last published work. The latter is, indeed, possibly superior in some respects; Captain AMDRUP, for instance, had been careful to obtain reliable information on the spot as to the uses of the implements in his collection, in addition to which Mr. THALBITZER has here had the advantage of being able, during a period of two years, to draw upon the firsthand knowledge of so experienced an authority as Kolonibestyrer JOHAN PETERSEN<sup>1</sup>.

The foregoing observations have been mainly concerned with the scientific side of Cand. THALBITZER's work. I cannot however refrain from adding a few words concerning his reference to the Museum with which I am connected, and which he has made use of for the purposes of his work, albeit, as we have seen, to so slight a degree, and in a manner so peculiar, as greatly to impair the scientific value of his work as a whole.

On p. 328, we are told that "only a part" of the Greenland collections "are said to have been set up in cases"; the reader will, however, look in vain for any definite statement as to who has "said" so. The Museum authorities, of whom it would be most natural to enquire, have certainly never said anything of the kind. The fact of the matter is, that since the general rearrangement of the collections, made some ten years back, 1) all the Greenland objects are fully exposed for scientific inspection in the gallery set apart for this section 2) with the exception of supplementary specimens and fragments from the finds made on the sites of Eskimo villages, which are placed in the window cupboards<sup>2</sup>, everything is set out in glass cases where

<sup>1</sup> THALB. II, p. 324.

<sup>2</sup> These cases, which, it need hardly be said, are likewise accessible for scientific inspection, contain only matters of little importance to the scientist, and nothing at all belonging to either HOLM's, AMDRUP's, JOHAN PETERSEN's or THALBITZER's collection. With regard to HOLM's collection, Mr. THALBITZER states in one place, with a somewhat ambiguous expression, that it "has lain" in the Museum since 1888; this is, however, according to a later written statement of the Author himself, to be understood as meaning that it has been on exhibition since that time.

the contents would be easily visible. 3) Newly received contributions are placed on view as soon as the necessary registration, etc. has been made. Immediately before the rearrangement above mentioned, and during the course of same, a number of objects were necessarily removed from their places and stored elsewhere: this took place, however, prior to the period of Mr. THALBITZER's ethnographical work<sup>1</sup>.

The rearrangement included the procuring of much-needed space through the fitting up of a gallery 24 metres long, consisting of five deep divisions, the interjacent portions reaching nearly to the glass partition. The accompanying illustration shows the arrangement in the case of a part of the Angmagsalik collection. The left side of the picture gives one of the deep divisions, where small implements are seen lying immediately behind the glass, while the background is occupied by hunting dresses, larger implements, and sledges. The photograph, taken on a cloudy day in October 1914 by the same photographer who carried out the work for Mr. THALBITZER, shows very clearly the dresses on the wall at the back. The left half of the picture shows, on the right, the side wall of the same division, occupied by a row of spears, and in the centre one of the projecting portions, while to the left again, the adjacent division, containing West Greenland objects, is partly seen. The labels on the front edge of the shelves give descriptive notes as to the exhibits there; at the back of the deeper portion, however, numbers only are placed, the descriptive labels corresponding being set up in a frame outside the case. The strip of wood running down the centre of the picture is the framepost against which the doors rest when closed, screwed fast against a lining of soft leather, on account of the poisonous chemicals used to preserve the numerous furs against moth.

It is this arrangement to which Mr. THALBITZER refers when he tells us that "The Greenland objects are placed in unusually deep glass cases, in which it is almost impossible for the visitor to see what is placed at the back and in which most of the objects can only be got at with great difficulty". As regards the first part of this statement, the reader can himself judge, from the accompanying photograph, taken at a considerably greater distance from the case than that at which the visitor ordinarily would stand, how far it may be justified. As regards the latter

<sup>1</sup> Unreasonable as it would seem, it is nevertheless not improbable that the Author's "are said" refers to this remote period, since, in a note on the same page, he harks back to the last century in order to draw attention to an alleged neglect on the part of the Museum authorities in connection with a request made to them. My own connection with the Museum Ethnographical Collections does not date back so far as include any personal knowledge of this ancient matter; I must therefore confine myself to the suggestion that since the gentleman concerned — an eminent American ethnographer, now long since deceased — did not think fit to carry the matter farther after receiving the letter forwarded by the Museum authorities under date 21.—6.—1897, then surely Mr. THALBITZER also would have done well to let it rest.

part, it should be mentioned that the whole interior furniture of the cases consists of loose shelves, which can be removed at any time with their contents. They were also thus removed for Mr. THALBITZER's convenience, and placed outside, where he could freely select and study his material.

The whole of this arrangement, with its alternating deep divisions, the movable shelves and large doors reaching from floor to ceiling, which can be drawn right back to the glass partition, has been commended by experts as an exceptionally happy solution of the problem: given a restricted amount of space, to obtain a scientifically adequate arrangement of the collections, rendering them at the same time thoroughly comprehensible for the ordinary visitor and easily accessible for the scientist.

Mr. THALBITZER then goes on to say that he "obtained very little time to study the objects taken from the cases, as they had to be brought out and put in again each day by one of the assistants". It is perfectly true, that the replacing of removed shelves at the end of each working day is one of the constant rules of the Museum. This is necessary, both for the preservation of the objects themselves, and for the convenience of the general public, and there can be no reasonable grounds for complaint when the same shelves are brought out next day by one of the staff to the same place where they had been placed for inspection on the foregoing. The research student would, on the other hand, have every reason to complain if the Museum authorities did not accord him sufficient time to prosecute his investigations: on this point again, however, Mr. THALBITZER's statement is altogether at variance with the actual facts. He was of course at liberty to have the same shelves removed for inspection as often as he might desire. Mr. THALBITZER has here evidently used an ill-chosen expression; it cannot have been his intention to say what his words imply.

With regard to his work in the Museum, Mr. THALBITZER further states: "I directed a request therefore in 1908 to the Director of the ethnographical section, Dr. SOPHUS MÜLLER, that I might be permitted to study the collections from East Greenland and first and foremost G. HOLM's. In the following year I asked to be allowed to photograph HOLM's collection. In the spring of 1910 I succeeded at length in beginning the work of photographing which extended over 16 days".

It must be admitted that this passage, taken sentence by sentence, is perfectly in accordance with the truth; here again, however, Mr. THALBITZER has been unfortunate in his choice of expression; his words as they stand might well be construed as meaning that the writer had spent a couple of years in vain endeavours to obtain permission to photograph and study the collections. This is far from being the case. Only in a single instance did Mr. THALBITZER meet with any hindrance on the part of the Museum authorities, viz. in the case of his

application in June 1909 for permission to photograph. Here the authorities were obliged to defer the desired permission for three months, the Museum being during that time open daily to the public, so that the rooms in question could not be reserved for special work. The fact that Mr. THALBITZER chose to wait until the 24th of February of the following year cannot be laid to the charge of the Museum.

Mr. THALBITZER tells us that he employed "a photographer recommended by the director" and that the work of photographing was carried out "in front of the cases, where the light conditions were not exactly good" and "somewhat hastily owing to the short working hours of the museum". It should here be observed, that although the Museum authorities furnished Mr. THALBITZER with the name of a photographer having considerable experience of photographic work in the Museum, he was perfectly at liberty to engage another had he pleased; further, that the photographer in question has declared in writing that the light was satisfactory, and that the working hours accorded — from 10' or 12 to 4 — were fully sufficient to permit of the work being done clearly and well.

It will thus be seen that Mr. THALBITZER has had full liberty to prosecute his studies in the Museum, the only restrictions being such as would inevitably arise from the regulations to which every student must necessarily be expected to conform. Since, however, he has been unable to realise the necessity of such restrictions, but has construed them as unfriendliness, and now endeavours to bring the Danish National Museum into ill repute abroad, the Museum authorities are forced to correct and explain the frequently vague and misleading statements in which he expresses himself. Mr. THALBITZER evidently fails to realise the fact that a Museum accessible to and much visited by the general public cannot altogether set aside the interests of the ordinary visitor in order to serve the convenience of a single investigator.

Finally, we read: "I regret that such a short measure of interest and friendliness obliged me to renounce a fuller utilization of the rich collections and has thus without doubt reduced the strength of my work". In the face of this repeated accusation, we must once more emphatically assert that Mr. THALBITZER might to the full have utilised the collections for the purposes of his work, and I will take upon myself to point out, that it was his plain duty as a scientist to utilise the Danish Museum to the highest possible degree, the more so since it is there, and not in the foreign Museums he mentioned, that the material which was to form the subject of his work was to be found. Had he, as he gives his readers to understand, encountered opposition on the part of the Museum in the prosecution of his studies, two courses would have lain open to him: either to request the Committee which had entrusted him with the work to intervene, or to declare that he could not, under the circumstances, undertake to complete the task. The course which he has adopted:

of publishing his work on the basis of highly inadequate study of his subject, and afterwards seeking to lay the blame on the Museum, carries its own condemnation.

The fact that the work in question has been accorded a place among the "Meddelelser om Grønland" which stand in so high repute as scientific publications, renders it impossible to disregard it altogether; the title in question is very properly regarded in scientific circles as conferring a patent of reliability. As a matter of fact, however, it should be borne in mind that the editors of the series do not hold themselves responsible for the contents of the volumes, and the individual author's selection of quotations, his treatment of literary sources, his description of objects and statements concerning their origin are thus likewise outside the Committee's control.

Since the foregoing was written, other works have appeared bearing in part upon the same points, and in certain respects supplementing the observations therein contained. It will therefore be proper to call attention to the publications in question. They are as follows:

Nordisk Tidskrift för Vetenskap, Konst och Industri, 1914, pp. 530—34, a review by GUDMUND HATT.

Meddelelser om Grønland, vol. 51; MORTEN P. PORSILD, Studies on the material culture of the Eskimo in West Greenland.

Det Grønlandske Selskabs Aarsskrift 1915, pp. 62—71, a review by KAJ BIRKET-SMITH.

The editors of Meddelelser om Grønland having intimated that a reply from Cand. THALBITZER will be published in the same volume as the present work, and that the discussion, as far as the periodical in question is concerned, will therewith be considered closed, I take this opportunity of mentioning that a further statement on my part may, if deemed necessary, be expected to appear in a Danish or English periodical.

Finally, I beg to express my best thanks to the Carlsberg Fund, which has borne the expenses of the foregoing work.

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#### CORRECTIONS TO W. THALBITZER'S ETHNOGRAPHICAL COLLECTIONS FROM EAST GREENLAND.

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369. L. 3; "ornamental expansions". These expansions are not ornaments, but are of practical importance, being intended to strengthen those parts where the pull of the thong is felt.
380. Fig. 83a (Mus. No. L. 4940) was not brought over by HOLM, but by W. THALBITZER 1906.

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383. L. 15—16. "Kayaks have been used everywhere naturally". Among the Polar Eskimos the kayak was at any rate not in use during the period 1818 to about 1860.
388. Fig. 92c (Mus. No. L. b. 695) was not brought over by HOLM, but by RYDER 1892.
389. Line 20; "bird's claw". The bird in question is a polar bear. Line 2 from below: "bow". NELSON, from whom the quotation is taken, gives "board" which makes better sense.
390. L. 4. "Various other small variations of this type also occur in Alaska. cf. NELSON l. c. Pl. LXXIX fig. 4 and MASON (1900) Pl. XIV". It is the same object (Washington Museum No. 160. 337) in both cases, and is not a small variation, but an entirely distinct implement, which cannot be used as a float and which stands on three legs rising above the kayak itself.
408. Fig. 103b (Mus. No. L. 1555) was not brought over by HOLM, but by JOHAN PETERSEN 1897. Fig. 104 is a child's harpoon. Figs. 105 and 106a—b (L.b. 688<sup>1</sup> and L.b. 687<sup>1-2</sup> respectively) were brought over by RYDER.
411. Cf. PORSILD p. 240—41.
418. Cf. PORSILD p. 241.
420. Figs. 116a (L.b. 686) and 118a (L.b. 678) were not brought over by HOLM, but by RYDER 1892. In the case of 116a, this correction should also be made in the text p. 419.
425. Cf. PORSILD p. 240.
432. Cf. PORSILD p. 240.
435. Fig. 137a, b, c (Mus. No. L.b. 689<sup>1-3</sup>) Figs. 139a (L.b. 685), 139b (L.b. 684) and 140b (L.b. 683) were all brought over by RYDER 1892. Fig. 140a, which belongs to the HOLM collection, has three teeth, the middle one must have been missing when the piece was photographed, as all three teeth are still in position.
439. Fig. 144 (Mus. No. L.b. 367) is part of a child's harpoon. The scale, stated as " $\frac{1}{8}$ ?" should be altered to  $\frac{1}{5}$ .
454. Fig. 152. The specimen farthest to the left, (Mus. No. L.c. 1335) was brought home by C. RYDER 1892; No. 3 from the left (Mus. No. L. 4944) by W. THALBITZER 1906.
455. In Fig. 154, the kayak stand belongs to RYDER's collection (L.b. 695<sup>2</sup>); the remainder is difficult to identify. The scale " $\frac{1}{14}$ ?" should be  $\frac{1}{8}$ . As to the double bladder cf. PORSILD p. 242.
458. Fig. 158. All six specimens (a—f) are from RYDER's collection 1892 (Mus. No. L.b. 659<sup>1-6</sup>); the same applies to Fig. 159c (L.b. 673<sup>2</sup>).
460. Fig. 161. This specimen is from JOHAN PETERSEN 1897 (Mus. No. L. 1555). The scale is stated as " $\frac{1}{10}$ ?".  $\frac{1}{10}$  is correct, and the query may therefore be deleted.
465. Figs. 172a (Mus. No. L.b. 658<sup>1</sup>) and 172b (L.b. 670) are both from C. RYDER's voyage of 1892.

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467. Fig. 174 (L.b. 661) was brought over by RYDER 1892.  
 468. Fig. 175b (L.b. 671<sup>1</sup>) likewise brought over by RYDER 1892.  
 471. Fig. 180b (L. 4920) was brought over by W. THALBITZER 1906.  
 473. Fig. 181b (L.b. 660<sup>1</sup>) is from C. RYDER's voyage of 1892, as also Fig. 182f (L.c. 1293).  
 476. Fig. 186 left (L. 4848) is from W. THALBITZER's voyage 1906; correction should also be made in text p. 475.

Linie 15—27. OLEARIUS' statement is misunderstood. The knives from Southampton Island have stone, not iron blades (*vide supra* pp. 404—05).

- Note 6. The illustration in GRAAH's work is Pl. VIII, not VII.  
 477. Fig. 187b (L.c. 371) was not brought over by HOLM, but was found by GRAAH as far back as 1829 at Malingiset, on the East coast of Greenland, Lat. 62°20' N. The scale of Fig. 187 is not  $\frac{1}{6}$  but  $\frac{1}{5}$ .

Fig. 188b (L.c. 1291<sup>1</sup>) was brought over by C. RYDER 1892.

478. Fig. 189 is not a hammer, but a chisel (*vide supra* pp. 398—99).

Fig. 190 is not a drill, but a whetting iron (*vide supra* pp. 396—97).

479. Fig. 191c (L. 1495) was collected by JOHAN PETERSEN 1897.  
 480. Line 1; *vide supra* pp. 396—97 L. 2 "likewise" should be deleted, as the former of the two objects was not brought over by HOLM.

Fig. 192b (L.c. 896) was presented in 1883 by Konferentsraad RYBERG: it was procured from East Greenlanders, but is hardly from Angmagsalik. Figs. 192c and d (L. 1506<sup>1</sup> and L. 1506<sup>6</sup>) were brought over by Joh. PETERSEN 1897.

481. Lines 8—9. Finger and knee protectors are also used on the West Coast.

482. Fig. 195, the scale is incorrectly stated; should be  $\frac{1}{2}$ .

489. Note 1. PEARY has brought home 3 meteorites to America (cf. Meddel. om Grønland vol. 32, p. 513).

496. Figs. 205a and b (L. 4446 and 4447). Presented by JOHAN PETERSEN 1909. c. (L.c. 1296) brought over by RYDER 1892. 205d-g and 206a-b we have been unable to identify. If preserved in the National Museum, it must be presumed that they are from West Greenland: they are in any case insignificant fragments.

497. Lines 21 ff. As the objects shown in Fig. 206 cannot be identified it is impossible to say whether a. is a scraper; this cannot be seen from the illustration. b. is a fragment of one of the flakes of stone which are of very frequent occurrence in West Greenland: they are found in hundreds, especially in the same small size. It is not likely that any important archaeological results can be obtained from this.

499. L. 25; The point shown in Fig. 210l is of bone, not of slate.

501. Cf. PORSILD p. 246.

502. Fig. 218a-b (L.c. 1292<sup>2</sup> and 1292<sup>1</sup>) were brought home by RYDER 1892. Fig. 218c is not a whetstone, but a whetting iron (cf. *supra* pp. 397—98).



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508. Fig. 223e (L. 4414) was presented by JOHAN PETERSEN in 1909.  
 509. Line 3 from below. The object shown in Fig. 223d has a red bead inset in the wooden handle on the side not visible in the picture.

Line 2 from below. Fig. 223e had a wooden handle, with iron arms and blade. The arms in Fig. 223f however, are of bone.

512. Fig. 231a is, it is true, mentioned by HOLM as a skin creaser; it was, however, doubtless originally intended as a toggle on some line which passed through the hole bored from one side to the other (cf. Fig. 531c).

Fig. 234a (L.b. 657<sup>1</sup>) was brought over by RYDER 1892.

517. Fig. 241. Text to illustration amended under corrigenda as follows: "guard . . . guard (HOLM coll.)  $\frac{1}{2}$ ". This scale is not correct; it should be abt.  $\frac{1}{5}$  (cf. *supra* p. 403).

Fig. 242a (L.c. 1299) brought home by RYDER 1892.

521. Fig. 249a (L.c. 1302) and c (L.c. 1305) likewise from RYDER 1892.  
 522. Fig. 250b (L.c. 1303) brought over by RYDER 1892; c (L. 1503) from JOHAN PETERSEN 1897.

528. Figs. 253a, d and f are from HOLM's collection; b. and c. from RYDER's, e. and i. brought over by W. THALBITZER in 1906, h. presented by Pastor C. RÜTTEL 1903.

529. Fig. 254b is from HOLM's collection, a and d are from RYDER's, c. is from JOHAN PETERSEN 1897.

531. Fig. 256b (L. 4429) presented by JOHAN PETERSEN 1909, together with the strap belonging to the "fire-making implement" shown in Fig. 256c, the remaining portions of which are from HOLM's collection. The lamp moss marked e. is from RYDER's collection (L.c. 1353).

533. Fig. 258. Only the wick trimmer placed in the lamp marked b. belongs to the HOLM collection: a-c. (L. 4426, 4423 and 4422) were presented by JOHAN PETERSEN 1909, while d. (L.c. 1350) is from RYDER's expedition of 1892.

534. Fig. 260. Only the drying frame a. is from the HOLM collection. The cooking pot b. (L.c. 1349<sup>1</sup>) and the lamp with stand d. (L.c. 1350—51) belong to Ryder's collection.

544. Fig. 263a (L.c. 1324) was brought home by RYDER 1892; b. (L.c. 937) by HOLM 1885.

Fig. 264 (L.c. 954<sup>1</sup>) is a model.

546. Fig. 271a (L.c. 964<sup>1</sup>). Scale ( $\frac{1}{4}$ ) incorrect; should be abt  $\frac{1}{2}$ . The length of the specimen is 17 cm.

Fig. 271b (L.c. 1329<sup>1</sup>) is not from HOLM's but from RYDER's collection; the scale is not  $\frac{1}{4}$  but a little under  $\frac{1}{2}$ .

Fig. 271c (L. 4419) was presented in 1909 by JOHAN PETERSEN; the scale is abt.  $\frac{1}{3}$ .

Fig. 271d-g are reproduced to scale abt.  $\frac{2}{7}$ , not  $\frac{1}{4}$ ; only f and

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- g. (L.c. 963<sup>1-2</sup>) are from HOLM's collection, e. (L.c. 1328) being from RYDER's, and d. (L. 1518) sent by JOHAN PETERSEN 1897.
547. Fig. 272. Both (L.c. 1326<sup>1-2</sup>) brought over by RYDER.  
 Fig. 273 (L.c. 268) sent over in 1849 by Kolonibestyrer KIELSEN (*vide supra* p. 393 ff.).
550. Fig. 276. Both the objects are models, a. (L.c. 1341) was brought over by C. RYDER in 1892.  
 Fig. 277 is a model.  
 Fig. 279 (L.c. 1546) was brought over in 1897 by JOHAN PETERSEN.
551. Fig. 280a (L.c. 1340) was brought over by RYDER 1892.  
 Fig. 280b (L.c. 959<sup>1</sup>) is a model; the scale given is incorrect, and should be, not  $\frac{1}{10}$ , but abt.  $\frac{1}{6}$ .  
 Fig. 280c (L.c. 267) was sent over in 1849 together with the specimen shown in Fig. 273 by Kolonibestyrer KIELSEN (*vide supra* p. 393 ff.).
352. Fig. 281b is not a drinking cup, but a blubber pot.
553. Fig. 283b (L. 2060) was presented by Pastor C. RÜTTEL 1903.
555. Fig. 285f and g (L. 4829 and 4828) were brought over by W. THALBITZER 1906.
556. Fig. 286b and j (L.c. 1345<sup>1</sup> and L.c. 1344<sup>1</sup>) are from RYDER's collection 1892; c. and m. (L. 1517 and L. 1516) were sent over by JOHAN PETERSEN 1897.
560. Figs. 289a and d (L.c. 1323<sup>1-2</sup>) brought over by RYDER 1892; e. (L. 4432) presented by JOHAN PETERSEN in 1909.
564. Fig. 291. None of these objects are from HOLM's collection, a. (L.d. 120<sup>1</sup>) was brought over by RYDER 1892, b. (L. 1536<sup>1</sup>) sent over by JOHAN PETERSEN 1897.
565. Fig. 292. Of these again, neither is from HOLM's collection, a. (L.d. 133<sup>1</sup>) is from RYDER's voyage of 1892, b. (L. 4393) was presented in 1909 by JOHAN PETERSEN.
567. Fig. 293. Here again, nothing from HOLM's collection. a. (L. 4396) was presented in 1909 by JOHAN PETERSEN, b. (L.d. 132<sup>1</sup>) is from RYDER's collection of 1892. These are, however, at least from Angmagsalik, which is not the case with the following: c. (L.d. 6) presented by Kolonibestyrer HØYER 1865, and d. (L.c. 222) presented by Inspektør HOLBØLL 1846 (*vide supra* p. 388).
569. Fig. 295. The dress (L.d. 119 etc.) was brought over by RYDER 1892, with the exception of the shoes, which are from the HOLM collection.
- 572—3. Figs. 296—297. This dress (L. 1531 etc.) is from JOHAN PETERSEN 1897.
574. Fig. 298. The dress (L.d. 118 etc.) was brought over by RYDER 1892. As to frocks of bird's skin cf. PORSILD p. 246.
582. Fig. 304 (L.d. 130 etc.) brought over by RYDER 1892.

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583. None of the garments shown in Figs. 305—307 are from HOLM's collection: 305 (L. 1541 and 1535) being from JOHAN PETERSEN 1897; 306 and 307 (L.d. 129—30 and 133) from RYDER's expedition of 1892.
584. Fig. 308. The specimen b. we have been unable to identify. The border on the lower edge shows that it cannot be identical with a.
585. Fig. 309. The garments are not from HOLM's collection; they are separate items received between 1849—54 and originate from southern East Greenland. The frock (L.c. 271) was presented by Kolonibestyrer KIELSEN in 1849, the breeches (L.c. 373) being the gift of H. RINK 1854 and the boots (L.c. 310) from HOLBØLL 1850.
586. The child's dress Fig. 310 (L.d. 131 etc.) is from RYDER's collection. The boots Fig. 311a-b (L. 4399 and 4398) were presented by JOHAN PETERSEN 1909.
587. Fig. 312 received in 1897 from JOHAN PETERSEN (L. 1533).
589. Of the objects shown in Fig. 314, only b. (L.d. 60) is from HOLM's collection; a. (L. 1542) was sent over by JOHAN PETERSEN 1897, while c. and d. (L.d. 140<sup>1</sup> and 146) belong to RYDER's collection.
591. Of the caps shown in Fig. 315 b. and c. (L.d. 138<sup>1-2</sup>) are from RYDER's collection, while e. and g. (L. 1543) were received from JOHAN PETERSEN 1897.
593. Of the eye-shades shown in Fig. 316 only half are from the HOLM collection, and of the remaining 5, only one, viz. that marked k. (L.d. 145) is from Angmagsalik, this being brought over by RYDER 1892. The other four are of earlier date and were procured from Julianehaab, whither they had been brought by natives from the southern East Coast; d. (L.c. 100) was presented by Kolonibestyrer KIELSEN 1840; g. (L.c. 177) by Inspektør HOLBØLL 1844; h. (L.d. 13) by Distriktslæge JESSEN 1881 and i. (4544) by Inspektør HOLBØLL in 1838.
596. Fig. 321f is from W. THALBITZER's voyage of 1906 (L. 4852).
597. Fig. 322b (L. 4851) likewise brought over by W. THALBITZER 1906.
598. Of the objects shown in Fig. 323 a. and e. (L.d. 142<sup>1-2</sup>) were brought over by RYDER 1892, that marked f. (L. 1526) being sent in by JOHAN PETERSEN in 1897.
599. Of the five objects shown in Figs. 324 and 325, only one, viz. 325a (L.d. 52<sup>1</sup>) is from HOLM's expedition of 1884—5; another, 325c (L.d. 26) was brought over by HOLM in 1881. No. 325b on the other hand (L.d. 150) is from RYDER's expedition of 1892, while 324a (L. 4404) was presented by JOHAN PETERSEN in 1909, and 324b is from W. THALBITZER's voyage 1906.
602. Fig. 327b (L. 1529) was received in 1897 from JOHAN PETERSEN.
603. Fig. 328a (L.d. 149<sup>1</sup>) belongs to the RYDER collection; b. (L. 4406) was presented in 1909 by JOHAN PETERSEN.
604. Fig. 330c (L.d. 151) was brought over by C. RYDER 1892.

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605. Of the six combs shown in Fig. 331, only one, viz. a. (L.c. 939<sup>1</sup>) is from HOLM's collection, those marked c., d. and e. (L.c. 1298<sup>1-3</sup>) being from RYDER's, while b. and f. (L. 1505<sup>1</sup> and <sup>3</sup>) were received from JOHAN PETERSEN 1897.
606. The comb in Fig. 332 is an imitation of a type of comb used at an earlier period; it was made to order for JOHAN PETERSEN.
607. Fig. 334 (L. 4431) was presented by JOHAN PETERSEN 1909.
611. Figs. 335b and d. and 339 we have been unable to identify, 338, however, noted by THALBITZER as "HOLM (?) coll." is, as a matter of fact, from RYDER's voyage of 1892 (L.c. 1337).
614. The two beads shown in the lower part of Fig. 343 we have been unable to identify; the two other items in the same Fig. however, (L. 4949 and 4950) were brought over, not by HOLM, but by W. THALBITZER, in 1906. The scale is incorrect: it should be abt.  $\frac{1}{3}$ .
- Of the objects shown in Fig. 344, that marked a. is from HOLM's expedition of 1884—85, and is part of the lock belonging to the wooden case shown in Fig. 289c (L.c. 979<sup>1</sup>); b. (L.d. 26) was received from HOLM 1881.
626. Of the three amulet straps shown in Fig. 348, that marked a. (L. 1493) was received from JOHAN PETERSEN in 1897, while c. was presented by Pastor C. RÜTTEL in 1903.
632. Fig. 350a (L.a. 17) is from HOLM's expedition of 1884—85; b. (L.a. 16) is not from East Greenland, but was taken from a grave at Ungdlik in the Julianehaab district. The rest, 350c-f and 351a-c were presented by Pastor C. RÜTTEL (cf. *supra* p. 382).
633. Fig. 352 (L.c. 1338) is from RYDER's voyage of 1892.
635. Line 3 from below to p. 636 L. 8; *vide supra* p. 391 ff.
636. Line 12 from below to p. 637 L. 2; *vide supra* pp. 399—400.
641. Fig. 360a (L. 4857) was brought over by THALBITZER 1906.
- Fig. 361 "Drumsticks". These are not two distinct objects, but two presentments of the same drumstick, viewed from side and front respectively. (L.c. 904<sup>3</sup>).
645. Fig. 366 l and m. are not, as stated, made of wood, but of bone (cf. *supra* p. 400); b. (L.c. 1269<sup>43</sup>) has a hairknot, later pegged down into the doll's head; this was, however, removed when the photograph was taken. The dolls marked c, f, h, i, k, l and m belong to HOLM's collection; the remainder from RYDER's.
647. Line 1—8; *vide supra* p. 402.
651. Fig. 372a-c (L.c. 1273<sup>1-3</sup>) and 374a (L.c. 1313) were brought over by RYDER 1892; 374c and d (L. 1507<sup>1-2</sup>) by JOHAN PETERSEN 1897.
653. Fig. 376c (L.c. 1280) }
654. Fig. 377 (L.c. 1286) } are from RYDER's collection.

Of the two puzzles shown in Fig. 378, that marked a. (L. 4945) was brought over by THALBITZER in 1906; b. is not identified, but is in any case not from the HOLM collection.

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655. Fig. 379a was sent over by JOHAN PETERSEN 1897 (L. 1494).
667. Fig. 392 (L.a. 1) was received in 1848, and is not from Angmagsalik (*vide supra* p. 388) Fig. 393 (L.c. 100) is likewise not from Angmagsalik; it was presented as far back as 1865 by Kolonibestyrrer HØYER.
674. Cf. PORSILD p. 246.
677. Lances *vide* PORSILD p. 246. "The shark's tooth knives", *vide supra* p. 405.
678. "Hammer, chisel, wedge"; *vide supra* pp. 398—99.
679. Cf. PORSILD p. 243 ff.
681. "Dolls" *vide supra* pp. 402—03.
- 682 ff. "Earlier authors on the Eskimo of the Davis Strait"; *vide supra* p. 389 ff.
725. Lines 11—15. The knives referred to are not, as stated, peculiar to Angmagsalik, but are also found in West Greenland.
728. On this page, reference is made to 39 "implements" or "forms and details of otherwise common types" as being peculiar to Angmagsalik. With regard to these the following should be noted:
4. Boat hooks. As to boat hooks nothing whatever is known. (*cf. supra* pp. 406—07).
  5. The cross-shaped kaiak stand has, as the Editor correctly states on p. 387, also been in use in West Greenland, and should therefore not be included here.
  13. Men's finger and knee protectors are likewise used in West Greenland.
  16. "Old-fashioned men's knives". The expression is certainly somewhat vague; here also, however, it will doubtless be correct to remark that such articles are likewise known in West Greenland.
  26. Ivory pendants as ornaments on needle skins are, it is true, only known from Angmagsalik: this is, however, merely a natural corollary to what is stated under (19), viz. that the needle skins are only found there.
  39. Slings are known among the Polar Eskimos.
736. "Hough W. Fire-making apparatus etc. Report Nat. Mus. Washington 1888"; should be "Report Nat. Mus. for 1888. Washington 1890".
- Similar correction should also be made in the case of all his references to W. HOUGH's and O. T. MASON's works, on pp. 736—7, whereas in the case of W. J. HOFFMAN's (p. 735) and T. WILSON's (p. 741) the date given is the year of publication.
- MASON's "Aboriginal skin dressing" is noted as from Washington 1888—89; it should be Rep. for 1889, Washington 1891.
738. "NORDENSKIÖLD, A. E. Den andra Dicksonska Expeditionen etc. Stockholm 1885?" The note of interrogation may be dispensed with.

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POINCY. The chapter in question is the 18th, not the 8th.

739. RYDER, C. Here should be added: Beretning om den østgrønlandske Expedition 1891—92 (Medd. om Grønland, vol. 17) this work being also quoted by the Editor (*vide supra* pp. 400—01).

"SCHACHT Manuscr. N. Kgl. S. 4° 1965 (and A. M. 364 Fol. and A. M. 775 4°) Kbhvn. 1789". Should be: A. M. 364 Fol. Kerteminde 1689. The rest may be dispensed with (cf. *supra* pp. 390—91).

- 743—53. Lists of AMDRUP's and THALBITZER's collections: *vide* p. 410ff.

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TRANSLATED BY W. J. ALEXANDER WORSTER











V.  
THE AMMASSALIK ESKIMO  
A REJOINDER  
BY  
WILLIAM THALBITZER



## I. The Explanation.

In the practice of mutual aid, which we can retrace to the earliest beginnings of evolution, we thus find the positive and undoubted origin of our ethical conceptions; and we can affirm that *in the ethical progress of man, mutual support — not mutual struggle — has had the leading part.*

P. KROPOTKIN, *Mutual Aid a factor of evolution.*

In 1914, the first part of my work on the heathen East Greenlanders appeared under the general title of "The Ammassalik Eskimo" and with sub-title: "Contributions to the Ethnology of the East Greenland Natives"<sup>1</sup>. The first portion of this volume consisted of an English translation of an earlier work on the Ammassalimmiut, by Kommandør GUSTAV HOLM, the discoverer of the region in question, containing also some papers by various other writers dealing with the same Eskimo tribe. The volume closed with my description of the ethnographical collections from East Greenland affording illustration of the culture of this same people; the collections themselves are preserved in the Ethnographical Department of the National Museum at Copenhagen. My description of these, which was mainly intended as a broader exposition of HOLM's previous commentary on his ethnographical collection, was supplemented by material from my own and other collections and observations from the same part of Greenland.

In an Introduction to this detailed description, I proffered some explanatory remarks concerning my preliminary studies, and the collections which I had consulted. I took the opportunity also, of expressing my thanks to the Museums concerned, in the following words:

"My thanks are due to all the Museums I have visited for the facilities offered me. It is with pleasure that I remember my visits to the ethnographical Museums in Berlin (1904, 1907 and 1912), Vienna (1908), Christiania (1908), Stockholm (1908 and 1910), London (1909) and Dublin (1909). Among these Museums I was obliged naturally to pay special attention to Stockholm's Riksmuseum owing to its excellent collections from Greenland connected with the names of PFAFF (North-West Greenland, inventory completed 1878), N. O.

<sup>1</sup> In Meddelelser om Grønland, Vol. XXXIX, Copenhagen 1914.

HOLST (South-West Greenland, 1880), G. v. DÜBEN (West Greenland, 1881) and A. E. NORDENSKJÖLD (East and West Greenland, 1873, 1883, 1885, 1896). I must express my heartiest thanks to the keeper of the Museum, Professor C. V. HARTMAN, for the effective kindness with which, in true comprehension of the difficulty of my research, he facilitated the study of these collections during my repeated visits in Stockholm.

My thanks to the National Museum of Copenhagen cannot rise to the same level of heartiness. The materials contained in this Museum are undoubtedly the most considerable existing, for a study of the ethnography of Greenland. Only a part of them are said to have been set up in cases. I was acquainted with the contents of these cases, but only as a general visitor, when "Commissionsen for Grønlands geologiske og geografiske Undersøgelser" in 1907 authorised me to publish a description of the Amdrup collection from East Greenland<sup>1</sup> in its "Meddelelser om Grønland". As a natural and necessary link in carrying out this purpose it seemed desirable to have a new illustration and edition of G. Holm's collection from Ammassalik, which has lain in our National Museum since 1888. I directed a request therefore in 1908 to the director of the ethnographic section, Dr. SOPHUS MÜLLER, that I might be permitted to study the collections from East Greenland, and first and foremost G. HOLM's. In the following year I asked to be allowed to photograph Holm's collection<sup>2</sup>. In the spring of 1910 I succeeded at length in beginning the work of photographing, which extended over 16 days. The work was carried out in front of the cases in the Museum, where the light conditions were not exactly good, by a photographer recommended by the Director and somewhat hastily owing to the short working hours of the Museum. I was present, of course, when all the photographs were taken, but obtained very little time to study the objects taken from the cases, as they had to be brought out and put in again each day by one of the assistants.

When the work was completed, I felt no inducement to continue my studies at this Museum, having the distinct impression, that my visits were unwelcome. I regret, that such a short measure of interest and friendliness obliged me to renounce a fuller utilisation of the rich collections and has thus without doubt reduced the strength of my work. On the other hand, I have had the good fortune of being able to fill up the gap to some extent by my journeys to foreign Museums, which the Carlsberg Fund with great liberality has supported".

These few passages from my book (1914, pp. 328—329) — a single page in a work of some seven hundred and fifty — were intended not only to remind the reader of the extent to which ethnographical material from Greenland is scattered about the world, but also to point out certain difficulties which I had had to encounter on coming in contact with the one particular Museum possessing the greatest store of such material. My remarks concerning the Ethnographical Department at Copenhagen

<sup>1</sup> "The Amdrup collection, which has been procured through the Carlsberg Fund Expedition to East Greenland, was at that time still in the possession of the Carlsberg Fund, though promised to the National Museum as soon as its description was ended".

<sup>2</sup> "It may be mentioned in this connection, that in 1897 already there was some talk of getting Holm's collection photographed, arising out of a private request from the well-known ethnographer ORIS MASON of the Washington National Museum, but the director of the Copenhagen Museum neglected to answer".

were designed to intimate the reason why I had curtailed my visits to that Department as far as I honestly could; the fact itself I felt constrained to mention, as accounting for certain failings in my work. My remarks, then, were meant in self-defence, and not aggressively. The effect, however, was surprising; the Museum Department took them as a challenge.

I am not authorised to reveal the manner in which the wrath of the Department was first visited upon myself; the present pages are concerned exclusively with Hr. Underinspektør THOMAS THOMSEN's criticism of my work. The form and tone of the critique in question leave no room for doubt as to its being the direct outcome of this animus; I am therefore called upon to refute, not the unbiassed expression of expert opinion, but the charges of a conscious adversary.

There are not lacking in Hr. THOMSEN's paper utterances indicative of the fact that he is acting at the instigation of departmental authority<sup>1</sup>. Even so, I fail to see on what grounds I should bow to his commission, since I consider him incompetent to deliver judgement on the crucial point of the case.

This crucial point is, of course, my personal relations with our Ethnographical Department, or, more correctly, the attitude of the Department towards myself as visitor and student. The treatment meted out to me by the Department was of such a nature as to prejudice my work, not least through the impressions which I carried away after my studies in this section of the Museum.

Hr. THOMSEN is, I maintain, incompetent to judge at all in this matter, as he was never present at such times as I was occupied in his section, and cannot therefore testify to the manner in which I was received and treated there. At the time when most of my visits took place, the Specialist of the Ethnographical Department happened to be busied about the duties of his office in other parts of the building. I have thus had no intercourse with this gentleman; I do not know him. And I have accordingly no intention of discussing the personal side of the case with Hr. THOMSEN.

I reiterate, however, that my work has been seriously delayed and impaired through the unfriendly reception accorded me by the Ethnographical Department. None of the errors or failings in my book — not even such as might appear to lie beyond the sphere of museum investigation — but was in some measure due to the undermining effects of this hostility.

And I further maintain, that I could not in fairness have formulated any other expression of thanks to the Director of the Museum Department, regrettable as this may seem. In giving my name to the book as its author, I was obviously obliged to explain, what I had realised before its completion, that it contained certain shortcomings, and

<sup>1</sup> e. g. in his paper pp. 382 (bottom of page), 422 and 425 (middle).

I intimated, on the last page of the work, that I understood wherein they chiefly lay. My consciousness of this, however, did not cause me very great anxiety, as I presumed that the errors would prove to be comparatively insignificant from the ethnographical point of view, nor have I since found any reason to think otherwise.

Hr. THOMSEN insists, for his part, that the Museum authorities cannot disregard these failings, the majority of which might easily have been avoided if I had gone to the Museum with a "list of the numbers" i. e. the inventory numbers with which the various objects are marked (p. 387, cf p. 385). What is here implied, of course, is that I had neglected to avail myself of the inventory lists.

In all the museums which I visited abroad, the inventory lists were courteously placed at my disposal; in some cases even before I had asked to see them. On seeking the assistance of our own Museum at home, however, I found that this source of knowledge, as regards the Ethnographical Department, constituted a sort of esoteric artesian well, closed down and sealed with seven seals, its contents only to be elicited in drops, and upon written application to the Director's Office. For reasons intimately connected with the crucial point before mentioned, I did not wish to pursue my studies further at the Museum after the work of photographing the East Greenland specimens was completed. The acquisition of these photographs I considered indispensable, as the minimum upon which I could undertake the task of preparing a book on the East Greenland Collections, and I regret that I was forced to be content with such a minimum.

Now omitting certain portions of Hr. THOMSEN's paper, which consists for the most part of longwinded fantasias upon themes from mine, we find that the remainder actually does give a quantity of good and concise information, drawn directly from these very lists. His paper shows, in several instances, that such ethnographical ledgers really may be useful to the student, not least on account of the valuable information they frequently contain as to the origin and purpose of specimens.

Hr. THOMSEN's paper thus indirectly serves to show how much I have lost by venturing within the precincts of our Ethnographical Museum, where I felt myself, only too soon, constrained to desist from further study.

As, however, the effects undoubtedly extended far beyond the mere weakening of my museum work, the scientific loss involved cannot be gauged by Hr. THOMSEN's indications. I am at any rate unable to accept his judgement concerning the shortcomings, real or conjectural, of my book, as an adequate estimate of the detriment suffered. In expressing my regret that the attitude of the Museum had thus "without doubt reduced the strength of my work" (my book 1914 p. 329) I was, it is true, also referring to such failings as have since been pointed out in Hr. THOMSEN's paper (he has thus, in a way, on behalf of his Depart-



ment, explained the nature and extent of the loss). But my remarks concerned also, indirectly, losses which are for myself personally of a far more serious character.

It is a question — to which I shall revert later on — whether Hr. THOMSEN's criticisms are of any scientific importance. I cannot but repeat here, that the manner in which my critic, in his "Notes and Corrections", deals with the work thus annotated and corrected, is biased and aggressive; any possible merits of the work reviewed are thus entirely ignored. It is a part of his tactical method to exaggerate the scientific importance of such mishaps as arose from my experiences in the Museum, as for instance where an article has been incorrectly assigned to this or that collection. The main point, it need hardly be said, is that objects shown or mentioned should actually be from the region concerned, and truly indicative of the native culture there prevailing. And that my work has achieved its aim in this respect is, I venture to opine, beyond all doubt.

My illustrations, and the text thereto pertaining, contain nothing but true examples of "Ammassalik culture". If certain positive data from the inventories are lacking — and Hr. THOMSEN appears to show a considerable number — these are nevertheless of such a nature that while they might have supplemented my description of the objects in regard to certain minor points, their absence is of slight import in viewing the culture of Ammassalik as a whole. — My critic had here, as an official of the Museum, very obvious advantages as against myself, and has enjoyed the privileges of his office for many years. For this reason also, he must necessarily be incompetent to judge of the case, having never himself been able to view the Department as a visitor, dependent upon the will and pleasure of the Director or his subordinates, nor even himself been present during my visits there.

We see him, then, seated at the very fount of knowledge, criticising and correcting; proffering, with a certain hauteur, the information which I endeavoured to obtain seven years ago.

Hr. THOMSEN's opus thus serves — strangely enough, since I do not know him personally — to confirm still further in its own way my earlier impression of Museum manners in this Department. I recognise, in the satiric style of his work, an echo from the days of my visits to his Department. The tone is in essentials the same, resonant of the very spirit with which I was received within those precincts — and which drove me thence. Evidently, the administrative influence of the Department is highly calculated to permeate and mould the personality of those who are for any length of time subjected to its sway.

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## II. Promises and Results.

My work has thus given rise to the publication — by the Ethnographical Department of the Museum — of a paper, 55 pages long, concerning the Greenland collections and other matters first dealt with by me. Truly a sudden ebullition of interest in the ethnography of Greenland! This is in fact the first time that one of the Department's officials has issued a work containing scientific details concerning the Greenland material and utilising the inventory lists. Save for the scientifically insignificant "catalogues" which are sold for sixpence at the door, nothing has hitherto been made public by the Department with regard to the large collections from Greenland preserved in the Museum, and chiefly of ancient date. The earliest departmental effort in this direction is now seen in Hr. THOMSEN's critical essay on my ethnographical works, whereby his privileged position, with immediate access to the sources, at last proves of some use to the cause of science.

The publication of my book has evidently fired the blood of our museum-ethnographers, and Hr. THOMSEN rises as their spokesman.

It will be somewhat of a mystery to most, why Hr. THOMSEN in the heading of his paper should wish to alter the title which I had given my book; to wit, "The Ammassalik Eskimo", not, as in his orthography, "Angmagsalik". My spelling is based upon long years of experience in the Greenland tongue, and I had good reasons for preferring the form chosen to that which happens to be authorised. Hr. THOMSEN's heading "The Angmagsalik Eskimo" gives a misleading alteration of my title, not to mention its seeming to claim for his little appendix the position of a counterpart to the work issued by myself concerning the tribe in question.

As to how far Hr. THOMSEN's "Notes and Corrections" furnish any grounds for supposing that he could have carried out the task which fell to my lot with better result than I have attained under the conditions prevailing and during the time available, this I leave others to decide.

Hr. THOMSEN must be content to admit that my work is in reality the first broad survey of Greenland ethnography in existence. He himself apparently does not know what it is to have published an ethnographical work, or indeed a considerable work on any subject, and he does not appear to realise how much more difficult is the work of a pioneer than that of a critic scrutinising along his track.

It may, however, not be out of place to call to mind how it was that I came to undertake a work of this specially ethnographical character.

On my return from a winter in Greenland (1906) I was invited by the Committee for Geological and Geographical Investigations in Greenland, and by the Director of the Carlsberg Fund, to undertake the description of the collections from East Greenland recently brought home to Copenhagen, and of which nothing had been published up to that date. I was the first man in this country since the days of G. HOLM, who had taken sufficient scientific interest in the culture of Greenland to learn the language and take up residence among the natives. Nevertheless, I hesitated to accept the honour of such a task. I had at that time published nothing beyond a book on the phonetics of the Eskimo tongue, in *Meddelelser om Grønland* (Vol. 31, 1904) which had called forth several reviews, all of an appreciative character, in specialist publications. I was now afforded a prospect of extending my sphere of work to a field in which no great scientific work on Greenland had appeared. Dr. H. P. STEENSBY had, however, shortly before published his thesis on the origin of Eskimo culture<sup>1</sup>, and I therefore suggested that the proposed work would be likely to interest him. The Committee nevertheless maintained that I myself, as the only man who had spent two years among the Eskimo and had learned their language, ought to undertake the work, while the Chairman of the Carlsberg Fund likewise urged it as a natural task for me to undertake.

I myself did not fail to point out that this would necessarily delay the execution of the earlier task entrusted to me by these same institutions, to wit, the publication of my linguistic and folkloristic material from Ammassalik, in which, moreover, I was more keenly interested, having myself procured the matter from the traditions of the Ammassalimmiut. I recognised, however, that it might be useful for the linguist to take up a branch of ethnography as an auxiliary; the two tasks might well be prosecuted side by side to mutual advantage. I was well aware that a considerable amount of previous study would be required, in respect of which I should have to seek recourse to the ethnographical side. But it never occurred to me to doubt that in the arena of science, the principle of mutual support must rise superior to that of every man for himself. I had up to that time no grounds for thinking otherwise. It is this I refer to in the introduction to my work of 1909 (p. 334):

"I hesitated at first to undertake work of a kind which lay outside the special line of study I had hitherto pursued. On the other hand, I was moved by the consideration that the publication of the AMDRUP collection had already been sufficiently delayed. This interesting collection surely deserved a better fate than to be forgotten. Further than this, in my capacity of linguist, I was sensible of the advantage of obtaining a better insight into the forms assumed by the material culture of the East Greenlanders; for changes in the implements

<sup>1</sup> STEENSBY's work has since appeared in an enlarged and translated (English) Edition in vol. 53 of *Medd. om Grønland*, with the title "An Anthropogeographical study of the Origin of the Eskimo Culture".

often run parallel to changes in the language and the Ammassalimmiut, in fact, have their own particular designations for many of their Eskimo implements and utensils (etc)«.

Finally, then, I agreed to undertake the work, and formulated a proposal for a somewhat extended scheme, to include an English translation of G. HOLM's ethnological work on the East Greenlanders, together with a new description of the most important types of implements in his collection. These additions I regarded as a natural link in the whole. I commenced my studies with confidence and pleasure. I did not then anticipate that my visit to the Ethnographical Department of our Museum was to be productive of most bitter disappointment; so much so indeed, as to cause me after a brief while to withdraw, in voluntary ostracism, from the place.

It is no secret, that Hr. THOMSEN some years back was commissioned to publish a description of the material brought home in 1908 by the Danmark Expedition (the famous voyage of MYLIUS-ERICHSEN and his comrades to the unknown regions of North-east Greenland). It has hitherto been less generally known, however, that the task in question was first offered to *me*, viz: at the same time as the Committee empowered me to deal with the finds of the AMDRUP Expedition from the central and northern part of East Greenland. As it happened, however, the ethnographical collection from the Danmark Expedition had in the meantime been handed over to our National Museum (1st Department), and from that moment, if not before, objections must have been raised by the Ethnographical Department against allowing the new and valuable acquisition to be dealt with by anyone outside the circle of the Museum's ethnographers. On learning that the ethnographers of the Museum were wishful themselves to undertake the description and publication of this collection from the extreme North-east of Greenland, I at once relinquished all claim to the honour, whereby I hoped to have removed all possible grounds for friction, and even, it might be, to have made a step towards securing the good will of the Museum<sup>1</sup>.

It was with reference to this situation, that I wrote, in the Introduction to my Description of the Amdrup Collection from N. E. Greenland 1909 (p. 343), as follows:

"These 'finds' have recently been added to. From more northerly districts of East Greenland than ever before, MYLIUS-ERICHSEN and his companions on the Danmark Expedition brought back a collection of antiquities. I have not yet had an opportunity of seeing this collection which immediately after

<sup>1</sup> Naturally, I should never for a moment have thought of intruding upon a scientific domain to which another could with any show of reason advance a prior claim; I had not the least desire to interfere with the handling of ethnographical material already entrusted to other hands.

its arrival was lodged in the National Museum at Copenhagen. It is to be hoped that it will not be long before we get a description of it by a competent hand".

This promised description is still to be looked forward to, and with the same hopes as before. When Hr. THOMSEN's ethnographical work finally does appear, I venture to hope it may be borne in mind, how thoroughly the author has studied mine.

### III. "Notes and Corrections" *versus* Scientific Research-work.

With regard to Hr. THOMSEN's "Notes and Corrections", I should be able to regard these with more respect if they were not so markedly redolent of the aggressive tendency before mentioned, which does not even draw the line at personal insinuation. The form of his attack is such that I have the strongest disinclination to answer it at all. I could expose myself without a tremor to the shafts of honest criticism loosed by a competent hand. But since becoming acquainted with the contents of his present paper, I can no longer trust his weapons as clean nor his competence as genuine.

My departmental critic has been pleased to dilate upon what he terms "Mr. THALBITZER's peculiar methods of dealing with Museum material" (p. 417)<sup>1</sup>. I have no idea as to what may be Hr. THOMSEN's method of dealing with Museum material. But I cannot accept his estimate of the various East Greenland collections in the Museum; his presentment of these appears to me misleading from the very commencement of his paper.

A false impression is created at the outset by the manner in which RYDER's collection from Ammassalik is referred to as if it were one well known to the public. Hr. THOMSEN endeavours to make this apparent by a footnote (No. 2) on p. 381, citing Medd. om Grønland vol. 17 p. 138 ff; there is, however, here no mention whatever of the fact that RYDER ever made any collection at all, still less that any such was contributed by him to the Museum. Even more remarkable is the fact that the Museum catalogue does not contain — or did not at the time of my visits there — any reference to the presence in the Museum of a collection from Ammassalik made by RYDER. No notices to such effect were hung up in the rooms, nor was there so much as a card in

<sup>1</sup> In the following pages, when citing Hr. THOMSEN's paper, the page numbers in this will be set in italics; references to my own work, Meddel. om Grøn. vol. 39, 1914 in black type.

the cases calling attention thereto<sup>1</sup>. For the purpose of my work, I had made every endeavour to obtain information as to all collections which might serve to illustrate the culture of Ammassalik, and obviously no one could be more interested than myself in knowing that there was a collection of RYDER's from Ammassalik, and this, moreover, exhibited in the large East Greenland case in our National Museum. I was unable, however, to ascertain this fact, which appears to have been known only to the collector and the official ethnographer of the Department. I naturally supposed all the exhibits in this case, and particularly all such objects as occupied a prominent position there, to have originated from HOLM's expedition to Ammassalik, except where otherwise indicated by special cards. I did not doubt, for instance, that this was the case with the complete sets of men's and women's clothing in the centre, as shown in my Figs. 294 to 300 and 304 to 310. Hr. THOMSEN now informs me that I was here labouring under a delusion. True, I was right in taking the dresses as belonging to the culture of Ammassalik, and it is likewise correct that HOLM collected a great number of them, but part of the material was, Hr. THOMSEN informs us, subsequently contributed by RYDER and JOHAN PETERSEN. The same, I understand, also applies to a number of other articles anonymously exhibited in the large East Greenland case at the Museum, and shown in my illustrations. My note: "Holm coll." under the figures is thus in certain cases incorrect, owing to my not having been able to procure this information earlier.

It is likewise misleading when Hr. THOMSEN asserts, that "these three collections" — i. e. HOLM's, RYDER's and AMDRUP's — "together serve to illustrate the culture of Angmagsalik at about the time of its discovery" (p. 382) — The statement is altogether correct only as regards Holm's and Amdrup's collections (the last-named from Nualik) both of which date from the time immediately before or immediately after the discovery of the Ammassalimmiut, whereas Ryder's collection was hastily made eight years after Holm's wintering there.

By this I do not in the least mean to assert that RYDER's collection from Ammassalik is valueless; it is even probable that there may, among the duplicates in this collection of the HOLM collection, be found some new forms and variations characteristic of the East Greenlanders. It is unwarrantable, however, to rank this collection, got together in the space of a fortnight, and made up largely of duplicates and articles

<sup>1</sup> Only such portions of RYDER's collections as were brought from Scoresby Sound were indicated by special cards in the museum cases, and have been made known to the public by RYDER's own frequently cited work on the earlier Eskimo occupants at Scoresby Sound, in *Medd. om Grønland*, vol. 17 (1895) pp. 281—343. In my ethnographical description of the northern finds in the AMDRUP Collection (ed. 1909) I have given all due credit to this work of RYDER's, and have also repeatedly referred to the same in my last work.

made to order, with the older collection, which was made in the very year of the discovery during the course of a winter's stay, or with one like AMDRUP's, consisting of antiquities from a deserted region of the coast.

RYDER himself moreover, takes quite another view of his collection from Ammassalik than of his material from the northern part of the coast (Scoresby Sound). The latter he has subjected to an excellent and exhaustive special investigation, whereas he makes only casual mention of the former in the report of his expedition along the East Coast, wintering at Scoresby Sound and touching for a short stay at Ammassalik. There is no statement in his report as to his having brought new forms of implements or other unknown objects from Ammassalik<sup>1</sup>. There is a brief and incidental mention<sup>2</sup> of the fact that certain pieces of needlework were ordered, and that an indefinite number of ethnographical specimens were obtained by barter on board the ship, these including the clothing ordered, etc. but no suggestion that this should serve to supplement, for instance, the Holm collection.

From the ethnographical point of view, the names of collectors can hardly be regarded as of primary importance. My selection from the various collections is such, that I can confidently recommend the illustrations in my book to anyone wishing to obtain a true idea as to the material culture of the Ammassalik Eskimo at the close of the period when this place was still in a state of isolation, or nearly so. Thus the term "Holm Collection" in my work must be taken as collectively indicating the oldest collections from Ammassalik; in some instances moreover (comprising in all 16 objects) including also articles of earlier origin in the Museum than the contributions from HOLM's expedition, and derived from the nearest stretch of coast south of Ammassalik<sup>3</sup>; in others, indicating duplicates subsequently received.

Hr. THOMSEN thus assigns to the RYDER collection a somewhat

<sup>1</sup> With regard to this place, RYDER had instructions to investigate, as far as possible, certain principle questions regarding the natives; e. g. whether they were acquainted with the use of the axe, as known elsewhere among the Eskimo. None such were found by HOLM at Ammassalik, nor any by Ryder (l. c. 138).

<sup>2</sup> RYDER l. c. pp. 130 and 135—36.

<sup>3</sup> These are, according to Hr. THOMSEN's inventories, illustrated in the following figures in my book: Fig. 187 b Shark's tooth knife (GRAAH 1829); 192 b Finger-protector (RYBERG 1883); 273 Water bottle of wood (KIELSEN 1849); 280 c Water tub (KIELSEN 1849); 293 c and d Women's inner breeches (c HØYER 1865, d HOLBOLL 1846); 309 Women's dress (the frock, KIELSEN 1849, the breeches, RINK 1854, the boots, HOLBOLL 1850); 316 Eye-shades with ivory relief work (d KIELSEN 1840, g HOLBOLL 1844, h JESSEN 1881, i HOLBOLL 1838); 325 c Woman's necklace, fragment (HOLM 1881); 392 Week Calender made of wood (1848); 393 Seal rattles (a or b? HØYER 1865). — In fig. 350 b is shown a wooden object (amulet board?) from Ungudlik in Julianehaab district, nearly akin to East Greenlandic culture.

over-prominent place; strangely enough, however, he omits from his description (p. 382) JOHAN PETERSEN's large and valuable private collection, acquired by the State for the Museum — at the request of the Director —, in the year 1910, when the collector was in Copenhagen on leave, after 18 years' residence in his official capacity at Ammassalik. This collection is nevertheless probably superior in several respects to RYDER's, having been made after careful preparation, with the chance of fortunate finds, and by one excellently acquainted with the natives of the place. JOHAN PETERSEN's name is mentioned, it is true, but his collection deserved special note in this connection, quite as well as RÜTTEL's and ROSING's collections of a single speciality (amulets)<sup>1</sup>.

### Plan and Contents of the Work.

p. 383. — Hr. THOMSEN here asserts, in his somewhat lofty style, that "The task entrusted to the Editor . . . was briefly and plainly this . . ." etc. He also refers to "the confusion which is thus apparent in the plan of the work". Now what does Hr. THOMSEN know of the task which was entrusted to me after my return from my investigations in East Greenland? It should already be evident to him, from the foregoing, that he had but an incomplete and partly incorrect idea of the same. And if I were to make public the plan of the whole work, including the translated edition of HOLM's book, which I laid before the Committee, at the request of the Chairman, on the occasion of the Committee Meeting in April 1907, and which, after having been accepted and recommended to the consideration of the Carlsberg Fund, was further supported by the same until the publication of my work in 1914 — he would be forced to take another view of "the task entrusted" to me from the very commencement<sup>2</sup>. All that he states with regard to this (p. 383—384) shows, that *he* considers the task too great, and that he at the same time does not know what he is talking about.

The matter dealt with in my work is, as the mere table of contents will suffice to show, arranged on clear and distinct lines. The confusion which my critic finds therein must be due to the quality of his own intelligence. I followed a principle similar to that observed by G. HOLM in his original edition; viz: that of placing the ethnographical

<sup>1</sup> JOHAN PETERSEN's collection is casually mentioned in a footnote later on (p. 394).

<sup>2</sup> My work contains, in the first place, what it was intended to contain according to the plan laid down. As regards the anthropology, I may refer to the section: Contributions to the Anthropology of the East Greenlanders, by SOREN HANSEN, in my book (1914) pp. 149—179. In the second place, the work contains in certain respects more material than the original scheme could possibly have anticipated. How can the work have deteriorated from the fact that the material in course of treatment grew richer and more up to date?



illustrations in a special section of the work, at the end (in the original edition on plates). I consider my description of the ethnography of the Ammassalik Eskimo (Section VII) as an extension of the brief notes appended by HOLM to his plates. Here, where I had a mass of illustrative material drawn from several different collections, I preferred to distribute the figures throughout the text, grouping them, of course, according to a natural classification.

When Hr. THOMSEN observes (p. 384) that "HOLM's treatise appears no longer as an independent work, but as an appendix" he is following a very devious train of thought; HOLM's pioneer work could never be regarded by any sensible scientist as an appendix, either to my book or to any other. If either of the two should be designated as an appendix, it must be mine; even here, however, the term would be incorrect, since my description forms a natural continuation of HOLM's, and is an independent contribution. In this the treatment of HOLM's ethnographical material has been supplemented by other matter from the same locality or from the neighbouring coast region to the south; I made a selection to the best of my judgment from the private collections or museums to which I had access. Had I omitted these collections, (other than HOLM's and AMDRUP's) my description would have been incomplete.

Thanks to my selection of the ethnographical material, the new edition of HOLM's famous book is now accompanied by augmented and more modern illustrations of the material culture of Ammassalik. It is obviously an advantage, that it also includes some specimens of the culture of the southern East Coast, which is so nearly allied to that of Ammassalik, even though the Museum inventory cannot furnish exact information in each particular case as to the locality on the East Coast whence these 16 specimens are derived. In a description of the culture of South-East Greenland, however, it is of minor importance to know the year and locality of origin of these articles, the more so since all are from the time previous to HOLM's expedition up along the East Coast. Ninety-nine percent of my illustrations are from the higher region of this culture, the fjords of Ammassalik and Sermilik, and the remainder from the neighbouring tract of coast to the south. The Museum critic might have spared himself the carping remarks as to my illustrations having been "drawn from different collections varying considerably in point of time and place". The strength of my work has at any rate suffered nothing from this particular fact.

#### Treatment of the Museum Material.

p. 385—88. — The reason why I did not make use of the Museum inventory lists has been shown in the foregoing (p. 440). I can have but little pleasure in expressing my thanks for information received seven years too late.

On p. 385<sup>20-21</sup>. — Hr. THOMSEN observes that "The Author 'feels some uncertainty in this respect' regarding ten illustrations in the text". This is a misunderstanding. It would be far more correct to say, that I felt a general uncertainty as to referring the objects to HOLM's collection, and merely mentioned the ten instances as examples (M. o. G. Vol. 39, p. 755), where the appearance of the objects, or of my photographs, gave me particular reason to doubt.

As already mentioned, the manner in which the exhibits were arranged at the Museum afforded the visitor no guidance; the East Greenland collections from this and the more southerly part of the coast were indiscriminately mingled.

I had no doubt at all, however, as to the essential point, viz: that all these objects were truly representative of Ammassalik culture (in the broader sense), and I considered the question of collectors' names as relatively subordinate.

I may add, moreover, — and I should like to emphasise the point — that since Hr. THOMSEN in several cases admits his inability to identify the specimens shown by me from his Museum (cf. p. 479) it will be reasonable to regard with some mistrust the whole of this side of his work. I have myself handled all these objects; Hr. THOMSEN has only the illustrations in my book to go upon. I may at least decline to be held responsible for his failure to identify certain exhibits, and his inability to do so is no concern of mine.

p. 387, note 2. Here, by way of variety, I find myself accused of having followed my authority too closely, i. e. literally. My quotation and reproduction of an illustration from NELSON's work on the Eskimo of Alaska will be found in a little Danish volume dealing with Greenland sagas on the past history of the Eskimo, included in a series of popular, or popularly scientific, ethnographical works published by C. V. HARTMAN (Stockholm). It is in the first place unfortunate, that Hr. THOMSEN should declare the notes under the two plates in NELSON's work to have been transposed, since the notes, as a matter of fact, are where they should be; it is the blocks for the plates which have been changed about (Pl. LIII to face p. 135 and Pl. LVIII to p. 151). Moreover, my illustration is not taken directly from Nelson's work, but is reproduced after a somewhat indistinct copy in another<sup>1</sup>. The details in my figure are therefore somewhat vague, so that it is difficult to discern the exact appearance of the head of the weapon, or to determine whether there is any connection between the lifted weapon and the thin line on the kayak. The only thing that is quite distinct is the slender shape of the throwing stick and its position at the rear end of the spear, which circumstance naturally leads one to suppose that it is a bird spear, in accordance with NELSON's note beneath the figure (though on the other hand, this does not exclude the possibility of its being a sealing harpoon). The fact that the well-known three lateral points are lacking

<sup>1</sup> I have since examined NELSON's original illustration, in order to see whether the details in the kayak and the man's weapons are here more distinct than in the copy. This is naturally also the case; even here, however, the illustration shows evident traces of having been made, not from a photograph, but from a drawing.

does not necessarily indicate that the weapon is not a bird spear, vide, e. g. NELSON's own illustration of bird spears (Plate LIX).

In other words, the illustration is not one from which the nature of the weapon can be determined with certainty, even by one well acquainted with Eskimo weapons.

p. 388. Here we touch upon my illustrations of the 16 specimens from the South-East Coast brought home prior to HOLM's arrival at Ammassalik. Hr. THOMSEN appears to have a particular affection for these articles, albeit their locality of origin in most cases cannot be more nearly decided than as from the neighbouring district south of Ammassalik, between Sermilik and Cape Farewell. Not having access to the Museum inventory lists, I was naturally unable to say more with regard to these objects than what could be learned from examination of the objects themselves. They belong in all essentials to the culture of Ammassalik, and may thus serve to illustrate the same.

Hr. THOMSEN's remarks anent my "fault" is in any case entirely beyond the mark, owing to the distinct bias which it reveals. His favorite statement as to these objects, that they "do not originate from Angmagsalik at all, but from the West Coast" (p. 388<sup>5</sup>) is altogether futile, since these objects, like many more of East Greenland origin, have been brought to the West Coast by travellers from the eastern side. There is, indeed, nothing at all to preclude the supposition that part of them actually originated from Ammassalik itself, or the neighbouring fjords, as we know to have been the case with other old finds brought to Europe by the same route. Even HOLM's Ammassalik collection reached us via the West Coast.

#### The Authorities Quoted.

p. 389—393. — What writer has, prior to myself, endeavoured to contribute to the study of Eskimo culture, from these early literary sources? If any there be, his name is assuredly not THOMSEN.

After eight years spent in studying the ethnography of Greenland, and having all but completed my main work on the subject, I had to consider the question as to what conclusion should be drawn from my comparative investigation. If such a conclusion were to be of any importance, it must necessarily embrace certain historical features; the colonisation of South Greenland by the Norsemen in the Middle Ages, the immigration of the Eskimo and their coming in contact with the Norsemen; the early appearance of the Eskimo on both sides of Davis Straits, etc. When nearing the conclusion of my work, my attention was called to a few old literary sources beyond those which I had previously consulted at our public libraries<sup>1</sup>. Had I neglected to include such material as was to be found in these works of ancient date, such

<sup>1</sup> Vid. my book 1914 p. 739 note 2.

as PURCHAS, HAKLUYT, FROBISHER, DAVIS, DE POINCY, Les Relations des Jesuites, CHARLEVOIX, LAHONTAN, etc. etc., I should undoubtedly have rendered myself liable to criticism. Now, when I have not neglected this, Hr. THOMSEN is pleased to criticise me for not having taken enough. He himself appears to have had plenty of time in his museum for a thorough study of my sources here, and the results of his industry make themselves apparent, as usual, in the "correction of errors".

— [Not even printer's errors are beneath his notice; evidently, all is fish that comes to his net. I do not in the least grudge him this pitiful sport; yet I confess I could have wished for a critic better able to distinguish between the trifling and the essential.

Hr. THOMSEN's zeal leads him at times to take advantages of such faults as are patently due to a slip of the pen or even, as indicated, to an oversight in the reading of the proofs. I may here at once point out one or two such instances, since they serve to illustrate his method. The placing of a ("sic") after a printer's error whereby "is" appears instead of the obvious "it" might almost seem to be meant in jest (vid. his paper p. 419<sub>15</sub>). And surely only wilful misunderstanding could fail to see that the two numbers 561 and 562 in my list of ethnographical collections p. 744<sub>4,5</sub> are a mere typographical slip for 56<sup>1</sup> and 56<sup>2</sup>. To class them among "scientific errors", as he does p. 412<sup>7-8</sup>, is misleading. The same, with some modification, applies to my *ekalugsaa* from OLEARIUS (cf. p. 467 here), and the date 1789 for 1689 (cf. p. 478). Such errors are always regrettable, but there are few large works in which none such can be found.

Even Hr. THOMSEN's own paper is not free from errors of this sort, more or less important; I will not, however, here waste space on any lengthy list, but content myself with the following observations:

In quoting my work, Hr. THOMSEN now and again introduces, on his own account, printer's errors or mistakes which do not appear there at all, and on the single occasion when he cites the title of my work (the real object of his criticisms!) that title is rendered meaningless by the omission of the last word. I must be permitted here to correct the following erroneous quotations in Hr. THOMSEN's paper:

Error.	Amendment.
p. 382 <sub>note 2</sub> "the East Greenland"	"the East Greenland Natives"
- 413 <sup>12</sup> "... a snow beater ..."	"... a snow beater? ..."
- 413 <sup>16-17</sup> "... (or toy harpoons?) ..."	"... (of toy harpoons?) ..."
- 414 <sup>17</sup> "Vantissard Island"	"Vansittård Island"
- 420 <sub>10</sub> "inv. Adm. 17"	"inv. Amd. 17"

On p. 417, Hr. THOMSEN gives a long passage from my book, tricked out with arbitrary spacing at various points; apparently with the air of extracting some amusement from the text thus deformed

He omits to point out, however, that the peculiar spacing is of his own invention.

On pp. 419—420, he repeatedly mentions the name of the Swedish ethnographer SWENANDER, with reference to my book. Unfortunately, the name is throughout incorrectly spelt — but this is Hr. THOMSEN's error, and not mine. — On p. 394<sup>5-6</sup> Hr. THOMSEN states that I have referred fig. 273 incorrectly to HOLM's collection; the reference is however, corrected on p. 755 of my work, and the same applies to several similar cases. — On p. 428 (ad 478) we find a verb in the singular ("is", etc) used with reference to the contents of my fig. 190, although the reference is to two objects. It is thus doubtful which of the two should be understood. — On p. 429 (ad 512) he makes mention of a fig. 531c in my book; none such, however, exists, as my figure numbers end with 398].

It was never my intention, I admit, to make an exhaustive investigation into the criticism of sources. What I sought in these old works was ethnographic material, not historical detail, and I still believe that my work is not without some value as having called attention to certain little-known passages bearing on the ethnography of the Eskimo in older times. Even if I have here and there been at fault — which I am the first to regret — my excerpts from the older writers yet contain much correct and noteworthy information of interest from the point of view of historical ethnography.

p. 389. — My book is intended to deal with the ethnography of the East Greenlanders, and in some degree also to compare the same with that of the West Greenlanders and other Eskimo. (And it should be borne in mind, that no detailed description of the ethnography of the West Greenlanders has yet been written).

My statement as to the number of Greenlanders brought, according to OLEARIUS, to this country from Greenland via Norway, is in accordance with the facts, since I did not include such as died and were buried before reaching here. On p. 436, I have correctly noted their route as via Bergen; the "via Trondhjem" in Note 2 p. 682 is thus due to a slip of the pen.<sup>1</sup>

On p. 390<sup>1-2</sup>. — "We are informed by Mr. THALBITZER that he [NICOLAS TUNES] 'landed at 64° 10' N. lat.'" My critic will not be able to weaken this fact. The figure may be seen in DE POINCY, and appeared to me more essential than the subsequent 72°, since there might from the first be some doubt as to the accuracy of these localities, which were not obtained directly from the Dutch captain, but have only been handed

<sup>1</sup> The same applies to the title of JACOBÆUS' book on the Royal private Museum, which is correctly given, in my "List of works consulted" as *Museum Regium* etc. but which I unfortunately happen to refer to on p. 685 (cf Thomsen p. 392) as *Theatrum* (instead of Museum) — possibly owing to the fact that the Latin preface to the work commences with the words: "*Theatro Orbis publico Museum Regium se sistit*" etc.

down to us through the medium of the author of a work on the West Indies. Less doubt, however, would naturally attach to the figure giving the more detailed indication, the more so when this corresponds to a spot far easier of access by sea than the more northerly one which Hr. THOMSEN prefers. "64° 10'" would correspond exactly to the position of *Godthaab*, the principal landing place in South Greenland, whereas "72°" would be *Upernavik*, the farthest Danish colony to the North, where only comparatively few ships touch. It may be uncertain whether DE POINCY's authority did land at 72° N. lat, but there is some reason to believe that he landed from Godthaab Fjord, and saw the objects described with his own eyes.

p. 390<sup>19</sup>. — "... that he (Mr. THALBITZER) does not even know on which side of Davis Strait it lies". It is an open question. At the Museum itself they do not know where the Dutch captain (NIC. TUNES) did land.

p. 390—392. — We have here a typical example of Hr. THOMSEN's somewhat pedantic method of criticism, to wit an eager scraping together of some inessential details, a few accidental inaccuracies, including a printer's error, from my mention of SCHACHT. Possibly I may have done the old compiler too great honour in according him 20 lines of small type; my critic, however, vouchsafes him twice the number. Hr. THOMSEN's observations serve for the most part but to obscure what I had particularly wished to call attention to in this old MS; they suffice, however, to lend him some show of learning for himself. As to the date at which the work was composed, I was, as it happens, not misinformed, as will be seen from the fact that I have correctly stated in the text p. 683, that the writer in question was born in 1660 and died at Kerteminde (Carteminde) in Funen, in 1700, and that my mention of him on the same page commences with the proper date of the MS.<sup>1</sup> Hr. THOMSEN's reference to the "List of writers" found in SCHACHT is as valueless as Schacht's list itself. Altogether misleading is my critic's note p. 391 (no. 1), for LAURIDSEN mentions, in his Greenland Bibliography, not one, but four MSS under the name of SCHACHT, naturally the same which I have noted.<sup>2</sup>

<sup>1</sup> My work (1914) p. 683: "In SCHACHT's Manuscript from the end of the 17th century, the illustrations of which are in part identical with those of DE POINCY etc." — The last interesting piece of information anent the illustrations is not denied by my critic.

<sup>2</sup> In P. LAURIDSEN's *Bibliographia Groenlandica* (Medd. om Grønland vol. 13) we find quoted under Schacht's name four MSS altogether, namely, in Section VIII D p. 156 (1) N. Kgl. S. Fol. no. 1290, p. 157 (2) N. Kgl. S. 4° no. 1965 and p. 158 (3) A. M. 4° no. 775; in Section II (p. 49), the MS (4) A. M. no. 364 Fol. These references are in agreement with the Catalogue of the Old-Icelandic MSS, edited by Kommissionen for det Arnamagnæanske Legat (1909). We have thus a complete original manuscript (from 1689) and three more or less defective copies. It is correct, that

With regard to the Dutchman, PALUDANUS, mentioned in my quotation from OLEARIUS, my critic has found, in a Dutch book, some very interesting information, and I can only advise him to pursue his studies further<sup>1</sup>. He refers, in a footnote, to OLEARIUS' *Gottorfische Kunstkammer*, without adding that this work was printed in Schleswig 1666. The "Kunstkammer" (private museum) in question was later transferred to Copenhagen, and had I been more cautious, I should not have stated of the remarkable idol from the 17th century, that it was brought to Copenhagen, but only that it came to Denmark (scil. Gottorp). Hr. THOMSEN adds "not from Western Greenland", but OLEARIUS mentions this idol in connection with "der Grönländer Religion" and it would thus be natural to connect the finding of it with DANELL's expeditions, which had then recently brought Denmark into contact with West Greenland (1652—54). — OLEARIUS' well-known "*Muskowitische und Persianische Reise*", in which the idol is described for the first time (cf. my work p. 683 note 3) was published in 1656, but the illustrations of the idol did not appear until some years later, and not first in SCHACHT's MS (p. 167), where I noticed it, but — and this I had overlooked — in OLEARIUS' second work from 1666, to which Hr. THOMSEN refers me. On comparing these two illustrations I find, that the one in SCHACHT's MS is somewhat larger than that in Olearius, and that it exhibits some slight alterations in the dress (the hair of the furs, the shading, etc.) whence it is evident that Schacht had not cut his figure out of a book. It is drawn with writing ink or indian ink on a slip of paper pasted into the MS, as are the remainder of his illustrations. — I have in my book, likewise on p. 683, note 3, given the text accompanying the figure from Schacht's MS, in his Latin translation, which now, however, turns out to be a quotation translated from OLEARIUS (1666). Hr. THOMSEN gives the German text, from this book, which answers to the Latin. Naturally, it makes but little difference which we use; SCHACHT's Latin is good enough, and tells us the same as OLEARIUS' German.

p. 393. I am well aware that the list of earlier writers might be added to, and I have never doubted that a considerable amount of further detail might be drawn from other works than those which happened to be available for my purpose (only, of course, excluding such as repose

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A M. 364 is the principal MS, and that it contains less than 200 pp. (there are in all 178, not 192 as Hr. THOMSEN states). The page numbers beyond 100 are, however, all written with an initial figure formed almost like the figure 2, which might easily be misread.

<sup>1</sup> In the footnotes to these pages Hr. THOMSEN exhibits a dainty specimen of his erudition. He appears, by the way, to have overlooked the Danish Historian L. BOBÉ, who, in his recently published paper "Christian Lunds Relation om Danells tre rejser til Grønland" (*Danske Magazin* 6. R. 11, 1915, p. 232 note 2) gives this and other information regarding BERNHARD PALUDAN (VAN DEN BROECK), a physician of Enckhuyzen.

in the Library of our Museum Department which I have long since grown to regard as beyond my reach). As it is, however, I never aimed at giving other or more than what I have given in this respect, and I think I may fairly claim that my selection as it stands is extensive enough. Should I, however, have overlooked any source offering valuable ethnographical information, the burden of proof lies with the critic who maintains this is the fact; Hr. THOMSEN makes no attempt at proving such to be the case.

Hr. THOMSEN is therefore wrong in endeavouring to make it appear that I had in reality aimed at giving a survey of all earlier sources of knowledge as to the lands on either side of Davis Straits ("attempting to give a synopsis of early works" p. 391<sup>11</sup>) and thereafter slighting the sources given, six in all, as "a very scanty and casual selection". We have here a repetition of the same misleading method in accordance with which he seeks on p. 383f. (cf. p. 448), to disparage my plan of work by proclaiming his own erroneous idea of what the "task entrusted to the editor" really was, and, by comparing the actual contents with this arbitrary scheme of his own, to prove the existence of "shortcomings" and "confusion".

Hr. THOMSEN speaks of my methods ("a certain doubt as to the results which may be arrived at by such methods") as if he considered the correctness of a method a safeguard against slips and printers' errors. It must at least be admitted, that my method has after all led to a certain positive result, whereas Hr. THOMSEN's has up to the present produced nothing but a negative criticism of my work. The very contemptuous words in which he speaks of my book appear to indicate a high degree of self-confidence, and hint at a method of quite another sort, of which he is the perfect master, and which is to be made manifest in his own coming work. When this appears, he will have had a certain amount of practice in examining "thoroughly, point by point" the whole of my book; we may thus, it would seem, be justified in expecting that his, in contrast to mine, will not invite such summary condemnation as "loosely written"; "not particularly readable"; and the like.

#### The History of Ammassalik.

p. 393—394. — Here the Museum official brings forward a note from his inventory lists, referring to an object procured in South Greenland 1849 and stated as coming from Ammassalik ("Angmarselik"). Thus we are now informed, for the first time, that the name of this place was known to a Dane in Greenland prior to the middle of the last century, about 35 years before any Dane had reached there. This secret has been well preserved at the Museum until now.

In this connection I may add, that the inhabitants of the same part of the East Coast are already mentioned in the literature of the



18th century, by P. C. WALLOE and D. CRANZ<sup>1</sup>, and, as far as I am aware, the next time about 1830 by J. C. MORCH, an official in the Julianehaab district. This last-named writer relates (in "Borgervennen", for 1831, pp. 34—35) that he had himself encountered people from the East Coast (66° N. lat.), but he does not mention the name of their native place. "These people, who had formerly been reckoned as cannibals, were the gentlest creatures [de frommeste Mennesker] one could imagine". We have doubtless here to deal with visitors from the district of Ammassalik. The writer mentions, at the same time, that the East Coast is inhabited as far up as 69° N. lat. (*Kialinek*), his information thus differing from that received by GRAAH during his voyage along the East Coast in 1830<sup>2</sup>.

We have here another confirmation from the earlier literature of the view given by later reports, to the effect that the East Greenlanders, also in some cases the natives of Ammassalik, made journeys to the West Coast several years prior to 1850<sup>3</sup>.

#### A Wooden Bottle from East Greenland.

p. 394—95. — Owing to the scanty space of time, which — loth as I was to enter the Department at all — I found myself able to devote to study there, I was not in a position thoroughly to examine each separate item or to revise my impression of the Museum collections while compiling my book<sup>4</sup>, and it is possible that I may have overlooked one of the three holes in the wooden bottle (only one is seen in my photo). Now, in 1916, the world at large is finally made acquainted with the true state of the case, thanks to the sensational statement of this Museum official.

It should be noted, by the way, that Hr. THOMSEN's explanation as to there having originally been a handle with sucking tube passed through the two lateral holes, is drawn from a note (unknown to me) in the Museum inventory, where the native tradition in this case is preserved, but is not to be arrived at from the appearance of the object in question, where the handle is lacking. "Mikeeki's waterscoop" No. 213 in the Petersen collection, which Hr. THOMSEN declares to be of the same type, had — if I remember rightly — but one lateral hole, through which was passed a handle with sucking tube. — It was not, moreover, as he asserts (p. 395<sub>14</sub>) "made to order especially for his [PETERSEN's] collection, on the model of a type then obsolete", for Hr. PETERSEN

<sup>1</sup> See my book (1914) pp. 339—340, cf. 335—336.

<sup>2</sup> GRAAH (1832) p. 140 cf my book (1914) p. 339.

<sup>3</sup> RINK, Grønland vol. II (1857) p. 359.

<sup>4</sup> The same applies to the Johan Petersen collection which at the end of 1910 came into the possession of our Ethnographical Department — „and since then I have not had the opportunity of seeing it" (My book, 1914, p. 325).

could not possibly have "ordered" a type of implement which he had never known or heard of<sup>1</sup>.

I have indicated this wooden bottle from Ammassalik as being "not typical, rather quite unique." Hr. THOMSEN does not venture on his own account to deny this, but contents himself with quoting a statement by JOHAN PETERSEN which he is thus not obliged to answer for, and possibly does not agree with. But even if the imitated wooden bottle found at Ammassalik by JOHAN PETERSEN should support Hr. THOMSEN's theory of the wooden bottle as an old-fashioned article (the oldest known specimen is that acquired by the Museum from 1848, whereas that in the Johan Petersen collection is a new product of different shape, and these are the only two known), it might well be correct that the other objects, which I have in this connection indicated as "not typical, rather quite unique", are so. I had here in mind the three objects which are described immediately after the wooden bottle in my book; a sucking tube for drinking water, and two wooden pails for drinking water, both belonging to HOLM's collection (Figs. 274 and 275 a and b). One of these wooden pails is made from a piece of a bamboo pole, and is absolutely unique. But also the two others are without parallel in our finds and collections, and I must still maintain that they are at any rate "not typical"<sup>2</sup>.

I might here pass on from these pages of Hr. THOMSEN's paper, were it not that he has, on p. 394, at the bottom, smuggled in a remark which, taken together with the footnote, is intended to have the effect of an insinuation. Without actually saying what he means, he slips in a comment altogether irrelevant to the question, on the fact of my having rendered some assistance to Kolonibestyryer JOHAN PETERSEN when he was seeking, after his return from Ammassalik in 1909, to dispose of his collection to a foreign Museum. Hr. THOMSEN writes as follows: "The expression 'Mikeeki's waterscoop etc.' is incomprehensible to the uninitiated, referring as it does to the unpublished catalogue of a pri-

<sup>1</sup> In order to avoid misunderstanding, I think it well here to call attention to the fact that Hr. Thomsen's fig. 1 (p. 395) does not represent the dipper in question (No. 213), but is of quite a different and far more common shape. I did not make use of this last from the Petersen collection for my book, having already illustrated a similar form from previous collections (fig. 263 a in my book).

<sup>2</sup> Hr. THOMSEN appears to have misunderstood my words in the text: "These objects (the wooden bottle etc.) show us" — as if they applied to the JOHAN PETERSEN collection, whereas they referred to the objects I had illustrated in my book, viz. figs. 273, 274 and 275, which are described before and after the mentioned words. I may admit that the sentence is unfortunately placed, and might better have stood after the description of the whole. On the other hand it seems to me that both my parenthesis (the wooden bottle) and the expression "show us" distinctly indicate which objects I referred to.

vate collection which the Editor was at that time endeavouring to dispose of abroad"<sup>2</sup>. — Hr. THOMSEN's inverted commas after "abroad" are due to a slip or error of his own, for it is not, of course, his intention to give any citation or to accuse any other of having disposed of the collection, but me. As to his note 2, see p. 394.

My assistance in the matter consisted solely in recommending this collection, and was but a natural expression of gratitude on my part for the untiring assistance which Hr. JOHAN PETERSEN had rendered me during my winter at Ammassalik, and for his courtesy in permitting me to photograph his collection for publication. With the practical side of the business, however, I had nothing whatever to do. I need not add that Hr. JOHAN PETERSEN had made his collection at his own expense and that he, as a matter of course, had his hands free in disposing of it.

The manner in which JOHAN PETERSEN's collection was finally disposed of (in December 1910) is an open secret. The Director succeeded, in a way which can not exactly be characterized as considerate, in bringing pressure to bear upon Hr. JOHAN PETERSEN (then a subordinate official in the service of the State) whereby it became possible for the Director to procure this valuable collection for his Museum. As a result of this inconsiderate and offensive treatment, the owner of the collection obtained exactly half the sum which he had asked (and could easily have obtained) abroad. — To avoid any misunderstanding on the part of readers unacquainted with the exact conditions, I may here call to mind that JOHAN PETERSEN's position as an official in Greenland did not involve any sort of obligation towards the Museum; on the contrary, the Museum had for years been indebted to him for repeated consignments, comprising not only specimens which he had been commissioned to procure, but also others voluntarily contributed by him<sup>1</sup>. And I may also point out, that many foreign museums actually possess ethnographical collections from Greenland, and even from Ammassalik itself, which have been procured at some time or other through Danish officials in this our Arctic colony<sup>2</sup>. Hr. JOHAN PETERSEN was naturally as free as his colleagues in regard to disposing of his collection. It would certainly seem that the Director of our Museum Department must have been aware of these facts when he entered upon a transaction of this nature.

In this manner then, the Director succeeded in obtaining for his Museum a valuable collection at a low price. Hr. THOMSEN is perfectly correct in stating that I was not unacquainted with the (scientific) value of the collection; his next remark, however, is somewhat surprising. If the Museum ethnographers took it for granted that JOHAN

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<sup>1</sup> cf. THOMSEN p. 382<sup>10,13</sup>.

<sup>2</sup> See my book (1914) p. 326 and 669—70.

PETERSEN did *not* know "its importance to the Danish Museum" (foot-note p. 394) we can better appreciate the clever manner in which this circumstance was turned to account by the Director in his endeavours to procure the collection and give as little as possible for it.

This is the first Greenland collection of any importance which the Museum has actually purchased. Up to that time, the Ethnographical Department had shown but slight interest in its rich Greenland collections, or indeed in the ethnography of Greenland at all. There is absolutely no reason for the authorities to be surprised at the fact that the collector finally preferred to offer the last of his collections to another Museum, more especially since it consisted mainly of duplicates of specimens which he had previously sent to the Danish Museum.

It is indeed remarkable altogether that the Ethnographical Department of the Museum should venture to touch upon the question of moral obligations in the case of its relations with a man who, independently of the Museum, interested himself in ethnographical work, and who had made considerable sacrifices in order to save the last remains of native culture for the cause of science. In the ethnographical sphere, the Department has to a regrettable degree lacked initiative. To quote but a single example; it was not at the initiative, or with the support, of the Department, that its cases came to contain what is now the classical base of all collections from East Greenland. Why has there not long since been set on foot a collecting enterprise in West Greenland similar to that of G. HOLM at Ammassalik? How much is now irretrievably lost to science in this sphere, owing to the lack of understanding or of will in the central organ?

I felt this strongly myself when, in 1900, I visited the ruins and refuse-heaps of *Sermermiut* at the mouth of the great icefjord near Jakobshavn; when I later passed the site of the well known *Qeqertaq* finds in the innermost corner of Disco Bay; and when I wintered in the deep fjords of the *Umanak* and *Egedesminde* districts, where great quantities of ruins, graves and kitchen-middens testify to the ancient Eskimo occupation. These are the regions where our countryman, Dr. PFAFF, a generation ago got together his great and unique collection of Eskimo antiquities, which, after having been rejected by the Danish Museum, were sold to a Swedish patron of science, and are now in the possession of the Ethnographical Department of the Riksmuseum at Stockholm<sup>1</sup>. There are always a number of private persons or state employees eager to procure curiosities of this sort, but it would surely seem that our National Museum, as an ethnographical centre, should long since have been foremost among those interested in such collection work, and for ethnographical research work in Greenland generally.

In our day, when so many regions of primitive culture are being destroyed or undergoing change, ethnographical museums have every-

<sup>1</sup> See Medd. om Grønland, 39 (1914) p. 669.

where considered it their duty to collect material, and this applies not least to museums in smaller countries which have the good fortune through their government to stand in relation with the colonies of their own land. As far back as 1887 the Danish ethnographer K. BAHNSEN trenchantly observed that "the museum which fails to avail itself of the present time bars the way to its own development"<sup>1</sup>. And from this point of view, he notes the rich material from Greenland in the Copenhagen Museum, especially Holm's collection from East Greenland, but criticises sharply, on the other hand, the inadequacy of the exhibits intended to represent West Greenland culture in the Museum. "From the West Coast, we still lack a collection made with the same degree of thoroughness as HOLM'S. True, there is a considerable amount of material from this region in the Museum, but a number of the details which make our view of the East Greenlanders' life so vivid are absent in the case of the West Coast, although this part of the country has been far longer known to us. Now that Holm has led the way, it can scarcely be long before a similar systematic collection is made on the West Coast, especially in the northern districts, where the inhabitants are nearer now to their former state in this respect than is the case farther south. It is a national duty to have Greenland represented in exhaustive completeness, since Denmark is the only country having the opportunity of collecting there, and Greenland, moreover, is our most remarkable colony"<sup>2</sup>.

At the Meeting of the Landsraad in South Greenland on the 2 September 1913, the Inspector of South Greenland as Chairman and some of the native representatives, on the occasion of the debate which had arisen concerning the preservation of culture memorials from Greenland, put forward a sharp criticism of the passiveness which the Danish National Museum up to that time had exhibited with regard to the work in Greenland, and laid down at the same time the plan for the Greenland Museum at Godthaab, which it has now been decided to erect<sup>3</sup>. And finally, in 1916, a circular was issued by the Danish State,

<sup>1</sup> K. BAHNSEN, *Etnographiske Musæer i Udlandet* (in *Aarbøger for nordisk Oldkyndighed*, 1887, p. 179).

<sup>2</sup> Cf. *ibid.* pp. 196—197.

<sup>3</sup> *Beretninger og Kundgørelser vedrørende Styrelsen af Grønland* No. 2, 1914 p. 194—195. — The Chairman of the South Greenland Landsraad stated under discussion of point 11 of the proceedings as follows: He wished to draw attention to the fact that the question only of late years had become one of present moment, as it had been found that both foreign visitors and Danish residents in Greenland systematically and without any consideration caused old graves to be plundered and their contents scattered abroad. He was keenly interested in the plan for preserving the old memorials of former culture, but he considered it unreasonable that grave finds should be handed over to the National Museum, and was surprised at the sudden interest now exhibited by the Museum, which had never before attached any importance to the question. Instead of entering into communication with the Danish residents, the Museum had remained passive, and had thus permitted the greater

with reference to Greenland, in which certain restrictions are imposed upon officials and others in the Danish parts of the country with a view to preserving the ancient cultural remains. The debate in the South Greenland Landsraad in 1913 did not pass unnoticed in Denmark, where the scientific research in Greenland, both as regards the country and the natives, has never lacked friends. Under pressure of circumstances then, the ethnographers of the National Museum found themselves at last obliged to recognise the fact that they also had certain duties to consider in our distant possession. Unfortunately, it seems beyond all doubt that the Museum has been somewhat tardy in coming to this conclusion, so that certain of the more perishable objects in Eskimo culture which were still obtainable a generation or less ago, are now no longer to be procured. There are others, private visitors, officials in the country, or even functionaries in subordinate administrative positions, who have attempted to carry out some part of the honest task in Greenland, but without any assistance from the expert knowledge of the Museum. And a great deal of scientifically valuable material has thus passed out of the country (Greenland).

It must thus appear the more unjustifiable for the Museum now to take up the cause of moral obligation against a private collector who, as in the present case, had for years rendered the Museum valuable service. In the name of science it should long since have been demanded that the First Department of our National Museum itself, by one or more expeditions to Greenland, set about the great systematic research of the ethnography of this distant colony which up to the present has never been made.

#### Whetting Irons.

p. 396—98. Here, as again and again throughout the work, Hr. THOMSEN's criticism is raised against an instance where I have expressed a certain critical doubt, or advanced another explanation than my predecessor, or ventured upon some hypothesis, or indicated the possible solutions which occur to me, where a single categorical assertion would appear to be misplaced. There is nothing in my doing so which

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part of the objects hitherto brought to light to be acquired by foreign countries.

He therefore considered it more proper to establish a Greenland Museum which should have the first claim to anything which might be found in graves or of remains from the time of the Norsemen.

Several of the native members then rose to support the motion. One of these, the Member for the 1st Division (JOSVA KLEIST, Frederiksdal) spoke as follows: He agreed with the idea, and likewise considered it unreasonable that the grave finds from Greenland should be allowed to go out of the country. The Greenlanders had no other history than that which the graves could show, and it was important that the people should be able to see the weapons and implements formerly in use, that they might learn in what manner their forefathers had lived.

offends against the general scientific practice, indeed the contrary is the case. I have at times been rather too conscientious than the reverse, with regard to expression of doubt or indication of possible solutions. Is it possible that Hr. THOMSEN can be quite a stranger to this method of treating scientific questions?

A remarkable object like the whetting iron resembling a drill in HOLM's collection led me to seek for something similar within the Eskimo regions. I believe that any unprejudiced reader, on going through the literature of Eskimo ethnography with me, would be willing to admit that no implement illustrated there shows a greater degree of similarity to HOLM's whetting iron than the drill shaft from Baffin Land to which I have referred, and which Hr. THOMSEN has considered worth while reproducing in his illustration. The similarity is present with regard to the features pointed out, and we have then the difference, that the shaft in the one case has a row of narrow grooves, in the other a single broader one. That the end of the Greenland implement is blunt, and not sharp like that of the drill, could of course easily be explained as due to fragmentary state of the object, more especially since the corresponding duplicate in HOLM's collection has a more or less pointed end.

My critic has evidently felt hurt at my having ventured to suggest that the explanation given by HOLM of these two pieces in his list, and in agreement with JOHAN PETERSEN, might possibly be incorrect, and that the original purpose of the implement could perhaps be viewed in another light if compared with related forms from other regions, as for instance the drill from Baffin Land. This was only intended as a modest suggestion, which might eventually lead to an explanation of the question as to how these unique Greenland implements had come to their remarkable appearance. Naturally, I never intended to put forward any emphatic denial of the correctness of the explanation already handed down, nor was it my purpose to give any final explanation as to the original use to which the implements had been put<sup>1</sup>.

With regard to the "whetting stone" in my book, which Hr. THOMSEN, despite my doubts, maintains to be of iron and not of stone, whereas I myself, after seeing and handling the object in the Museum, came to the conclusion that it was of stone, I see no reason to carry discussion further in these pages. But the matter might well be deserving of further investigation.

p. 398—99. — Hr. THOMSEN at times, in his eagerness to pick out quotations from my book, uses my words as his own. In this case he

<sup>1</sup> Hr. THOMSEN has himself elsewhere taken a similar liberty; on p. 429 (ad Fig. 231 a) he expresses a doubt as to a statement made by G. HOLM. The implement noted by HOLM as a "skin creaser" Hr. THOMSEN here prefers to regard as a "toggle" (his words are: "it was, however, doubtless intended as a toggle on some line").

is simply repeating a correction which I myself had made, the correction on my part being naturally due to my co-operation with the natives, or notes from the time of my stay, and not museum studies.

A mere reiteration of this nature would surely seem to be superfluous.

#### An Eskimo work of Art.

p. 399—400. — With regard to Hr. THOMSEN's note as to this, I would first of all observe, that his characterisation of the two faces must be taken on his own responsibility; and further, that he entirely ignores my principal statement. I emphatically pointed out that we have here "the only really old evidence of the occurrence of masks or mask-like objects in Greenland". The remainder is based upon mere conjecture as to the purpose of the objects, and I have left the question open. It should in this connection be noted, that the object is only a fragment, the neck of the head being broken, and there is nothing to preclude the supposition that it may have been placed on a memorial post several feet high such as those described by NELSON from South-West Alaska<sup>1</sup>.

I admit that my memory here played me false, so that I referred to the object as a grave find, whereas the inventory lists record it as found on the excavation of an old house, evidently owing to the fact that the carving of the wooden block was done during winter in the house in question. This need not, however, contradict my explanation of the purpose for which it was intended.

#### Wooden Dolls.

p. 400—402. — My reference to RYDER and GRAAH is in connection with a sentence in my book reading as follows:

"As already mentioned the wooden dolls of the Ammassalik children must be considered in the main as toys but it is possible, that by the grown-up people they were formerly given a significance beyond their capacity as playthings"<sup>2</sup>:

<sup>1</sup> NELSON writes: (l. c. p. 318—319) that it was the custom south of the mouth of the Yukon river "to erect memorial posts for all people who die in such a manner that their bodies are not recovered (e. g. drowned at sea, or buried by a landslide in the mountains)". At the annual feast for the dead, sacrifice is made to the figure of the deceased, and a new coat placed on the figure. In addition to the fact that "a number of small wooden figures" might be erected at the grave "in honor of people whose bodies were lost" we have the occurrence, for instance, at a grave at *Tununek*, of a single "post" upon which were "nine images of the large hair seal" in a row, i. e. miniature bodies no larger than the double mask found in East Greenland.

<sup>2</sup> "RYDER (1875) pp. 139—140; GRAAH (1832) p. 101". Quotation from *Meddelelser om Grønland* 39, pp. 644—645.



It will be seen that we have here a problem as to the solution of which there may be some doubt; now, the dolls are playthings and nothing else, but there may be some reason to suppose that they were formerly regarded in a different light, at any rate by adults.

Hr. THOMSEN cannot deny that both GRAAH and RYDER here found a similar problem, and that this is plainly evident from the passages in their books to which I refer and which he partly quotes. These writers have taken up the same question as I myself; GRAAH very briefly, RYDER more in detail, and Ryder ends by asserting that the dolls are now at any rate only playthings for children.

Hr. THOMSEN, however, is evidently anxious to find me guilty of misquotation or some other misdemeanour; at any rate he makes desperate efforts to obscure one side of the opinion expressed by the writers in question and emphasise another, by quoting the respective passages and setting certain sentences in spaced type as if in the hope that these may at a hasty reading produce a different impression in the reader's mind. And finally he omits the one sentence in RYDER's observations which would most of all serve to damage his case. RYDER states clearly as follows: "The wooden dolls are *now* used by the natives of Angmagsalik only as toys for children"<sup>1</sup>. And a little farther on we read, at the conclusion of the whole discussion:

"Selvom der derfor muligvis engang i Fortiden har været en eller anden højere Tanke forbundet med disse Dukker, hvad jeg for min Del efter det foran anførte meget betvivler, saa er Dukkerne for de nuværende Beboere af Angmagsalik kun Børnelegetøj".

[Translation:] "Even if there may possibly, at some time past, have been some higher idea connected with these dolls, which I for my part, after what has already been stated, am much inclined to doubt, for the present inhabitants of Angmagsalik the dolls are only playthings". — RYDER.<sup>2</sup>

The problem does not appear altogether the same to GRAAH as to RYDER; the former writer has found some "dolls" in an East Greenland grave, and asked himself whether they are "idols" like those which the savages presented to the Danish discoverer of Bering Straits; the latter finds the dolls in possession of children, and is reminded of the well-known amulet dolls which we have found at Ammassalik. Despite this, both reject the idea that the dolls found should be other than playthings; RYDER, however, with a certain hesitation, considering it not impossible that such may have been the case in former times. I am thus certainly justified in referring to these writers as to men who have considered the question, quite apart from the fact that I have in my own

<sup>1</sup> This sentence from RYDER's paper is found in Hr. THOMSEN's quotation, see p. 401. The italics in *now* are mine.

<sup>2</sup> RYDER, Beretning om den Østgrønlandske Expedition 1891—92 (Medd. om Grøn. 17), p. 141. — This passage Hr. THOMSEN omits in his quotation p. 401.

investigations later on come to a conclusion which suggests the probability of this alternative, that "there may possibly at some time past have been some higher idea connected with these dolls".

That the dolls used by children as playthings are different from those used by the Ammassalimmiut as amulets or idols I have myself also pointed out in my book (pp. 644—646), but I leave open the possibility that the dolls may in the parents' eyes have been connected with some religious principle or custom. Many other sides of the Eskimo life and property have been subjected to the control of religion or magic<sup>1</sup>.

Hr. THOMSEN may therefore enjoy his irony by himself, and pocket his insinuation again. Once more his hypercritical zeal has overshot the mark.

p. 402<sup>13</sup>, read "seemingly" instead of "evidently".

### Jointed Dolls.

p. 402—404. — *Parturiunt montes*. Hr. THOMSEN appears greatly upset by the fact of my having compared the finds of dolls with movable joints at Ammassalik with similar finds made among the Eskimo's neighbours in Asia, and combining this fact with the theory of marked conservatism in this race, which has given rise to so many other similarities in the culture of the western and eastern Hyperboreans.

I am certainly justified in offering a warning against drawing hasty conclusions as to "European influence" in cases such as this. It is Hr. THOMSEN and not I who drags in the jointed dolls of ancient Greece.

I have, by the way, on other occasions pointed out, that we might expect to find — and as a matter of fact actually do find — traces of European influence reaching even as far as Ammassalik by way of the south, and this already in times long past (e. g. my book p. 719, cf. p. 332—339, 471, 486—487, 668 and 682). In this instance, however, I have not deemed it necessary to have recourse to such explanation.

I have had two examples of dolls with movable joints on which to support my view, both from Ammassalik, one belonging to the Greenland Administration collection (see fig. 368 b in my book 1914, p. 647) and one in the National Museum, belonging to the Thalbitzer collection there (not illustrated). Hr. THOMSEN further mentions seven specimens, likewise from Ammassalik, all "jointed at the knees", which I did not succeed in discovering at the Museum. I myself have had since the good fortune to make the acquaintance of yet another wooden doll, with movable hip-joints, belonging to JOHAN PETERSEN's latest private collection (Fig. 1 in this paper). We have thus altogether ten wooden dolls with movable joints from Ammassalik. The last specimen was found by some native hunter belonging to the family of MARATTE, near

<sup>1</sup> The same is true of their tattooing, vid. the remarks of HOLM in "Den danske Konebaads-Expedition" pp. 227—228.

*Kialineq*, far to the north of Ammassalik, where the family in question wintered during the year 1912—13 after the district there had not been visited by any of the natives since 1882. The wooden doll here found thus dates from the time prior to the arrival of Europeans at Ammassalik, and supports the impression that dolls of this sort were made by the Greenlanders in ancient times.

If Hr. THOMSEN could find some means of proving that the wooden objects in my fig. 241 are implements of an old Eskimo type, and ex-



Fig. 1. Wooden doll with movable hip-joints, from Kialineq, East Greenland. Johan Petersen priv. collection.  $\frac{1}{2}$ .

plain their use, he would be doing something more useful than when counting the holes in them. We find, by the way, mention of a wooden almanac with nine holes in the old Journal of P. EGEDE<sup>1</sup>.

#### Shark's Tooth Knives.

p. 404. — It is quite correct that Olearius writes *Ekulugsua*, but the word as thus given in his original work itself contains a printer's error; his *Ekul-* must doubtless be meant for *Eka-* (he spells, in German fashion, all substantives with an initial capital); in the language of

<sup>1</sup> P. EGEDE, Journal, (1788) p. 79: "for I had made as many holes as there were days until the 9th January" (i. e. nine) "on a small piece of board, with a peg to move each day".

today the word is spelt *ekalugssuak*. In my quotation from OLEARIUS an additional printer's error has unfortunately crept in.

p. 405. — Hr. THOMSEN's remarks anent my observations on the shark's tooth knives seem to me to be somewhat superfluous, and in part irrelevant. He points out, quite correctly, that shark's tooth knives can be single-edged<sup>1</sup>. But my description of the double-edged shark's tooth knives, which are of far more frequent occurrence than the former type, is in accordance with the facts, and the knives with stone cutting edges from Southampton Island I have myself referred to. (Our European distinction, by the way, between the two materials, metal and stone, would hardly be understood by the Eskimo, who have never been in contact with European culture; to them iron is probably merely a kind of stone). — The paper by JAPETUS STEENSTRUP, to which Hr. THOMSEN refers in this connection, I have myself also quoted, viz; on p. 488 in my book, where I dwell on the knives described by STEENSTRUP from West Greenland, made with small "iron plates which were fixed in a groove along the edge of a bone haft"; i. e. resembling the Australian native type of knife (or saw) with a row of small flint flakes set in a resinous mass along a handle<sup>2</sup>.

Hr. THOMSEN concludes with some fantastic conjectures as to what he imagines to have been my object in mentioning the ethnographical parallel.

#### Umiak cleaner or boathook.

p. 406. — An umiak or a kayak intended for paddling about among the ice-floes of the East Greenland sea might well find some use for a boathook, and even a short one would be handy at times. The so-called umiak cleaners (HOLM) are known only from Ammassalik, whereas boathooks of similar form, but longer, are well known among the Labrador Eskimo, and now also from West Greenland (see PORSILD 1915, p. 247).

#### Harpoons.

p. 407—408. — In my book (1914, p. 411) I raised the question of a detail in the technical construction of the harpoon, to wit, the method of joining the foreshaft and the loose shaft, as my experience in East Greenland did not bear out the earlier description of this point given by OTIS MASON. I therefore directed my criticism towards this writer, albeit with all due respect for his ethnographical work, and Hr. THOMSEN admits that I am right thus far. On the other hand, I may acknowledge that I was beyond the mark in supposing that my criticism could also be extended to apply to the harpoons from the West Coast

<sup>1</sup> See Medd. om Grønland, vol. 10, Pl. XXVI.

<sup>2</sup> BAHNSON, Ethnografien, vol. I, 18 (fig. 11, c).

of Greenland; these are, on closer examination, found to answer to MASON's description<sup>1</sup>.

It is a satisfaction to me to note, that my having touched upon this detail in the structure of the harpoon has already induced three ethnographers to take up the matter for discussion. One of them has already criticised another on the same point<sup>2</sup> and assisted him to a correction. As it is, I admit, that MASON's error has proved to apply only to the harpoons of the East Coast, not for those of the West Coast, his description of these latter being correct. To make quite sure, I satisfied myself on the point by personal observation when travelling on the southern part of the West Coast in the summer of 1914.

As regards the harpoons of the East Coast, my description is correct.

p. 409—410. — My Museum critic is a past master in the art of employing quotations dissociated from their proper context. His paper contains many instances of this. In the natural light in which they appear in my book, these passages are free from the false reflections, and the criticism does not hit the mark.

#### Contents Lists of the Collections.

p. 410—416. — The pedantic acerbity of the Museum official rises in the following pages to an astonishing degree.

"The reader will naturally expect" etc. (p. 410). I can only repeat what I have already stated on p. 448 (with note) and p. 456: that I never intended my work to give either more or less than it contains. With regard to the genesis of my book, the reader may refer to the preface (in 1914) and to pp. 442—46 of the present paper. From this, as from the work as a whole, it will be seen that I am not a representative of any museum, least of all our own National Museum, and it would thus be altogether outside my province to publish the lists of the Museum collections in my book, or subject myself to the principles of that institution. Hr. THOMSEN's objections to my arrangement of these matters appear to me as extraordinary as they are improper.

It is obviously the duty of the Museum, and no business of mine, to publish inventories of the collections in its care. The Museum has

<sup>1</sup> In taking up this matter for the first time, I kept in the main to my experience in East Greenland. During my previous stay in West Greenland, I had not devoted any attention to this slight detail. Nor had I in the museums examined the harpoon shafts especially as to this detail, which is hidden between the two parts of the shaft, as it is my habit to observe great care in the handling of museum exhibits. The highly dried specimens, both thongs and other parts, near the junction of the shaft are generally brittle, and if I had attempted to bend the loose shaft over for examination, I should have risked a break at the joint. A Museum official, on the other hand, can take greater liberties with his material.

<sup>2</sup> See THOMSEN, p. 409 note 1.

now acquired JOHAN PETERSEN's collection, and might well publish the inventory list. As long as I had access to Hr. JOHAN PETERSEN's private collection, I could of course make use of his inventory with discretion, but I had neither the obligation, nor any right, to make it public. In the Museum, I had access to the Holm collection and others, but not to the inventory lists. For these and other reasons then, I considered it out of place to fill several pages of my work with the catalogue already published (in *Medd. om Grøn.* vol. X pp. 351—358); I contented myself with giving in extenso HOLM's introduction to his list (see my work 1914 p. 753).

On the other hand I have of course the right, and excellent reason, to publish the inventory of my own collection, either in part or in full. To suggest that this should have been done at the expense of the lists for the Holm and Petersen collections is simply nonsense.

With an outward show of science, Hr. THOMSEN here endeavours to create the impression that a Museum Expert is now coming along to help us out. I do not think, however, that these specimens of inventory criticism will excite admiration outside the select circle of the Ethnographical Department, and it would perhaps have been well for the reputation of the gentlemen concerned had the criticism in question never appeared.<sup>1</sup>

p. 412. As to the observation that "another scientific opinion pronounced it a hare" I am somewhat in the dark as to what is here intended, but it is doubtless of slight import. I had my information, as it happens, from a native Greenlander, who has himself seen the polar bear rear up on its hindlegs to defend itself against attacking dogs. And my informant is certainly more competent to judge than either the Museum official or his zoological friend.

p. 413—414. Surely criticism such as this cannot be squeezed within the bounds of common fairness. If only as an example, it seems worth while looking into the manner in which Hr. THOMSEN deals with some amendments made by myself in the later list, or my own corrections of unavoidable misunderstandings in my earlier investigations.

In the course of my ethnographical studies, I gradually attained to a more correct appreciation of certain objects in AMDRUP's finds from the depopulated part of the East Coast, and was thus in 1914 able to put forward a more likely explanation of two or three implements than in 1909. Now, after having had the opportunity of consulting my final

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<sup>1</sup> For those who have not time to look up the extensive references of my critic I would merely call to mind that a period of several years elapsed between the publication of "List I" 1909 and "List II" 1914, the latter being thus a revised, improved and augmented list. In the latter, moreover, it is naturally only a printer's error which gives the numbers of Figs. 56<sup>1</sup> and 56<sup>2</sup> as 561 and 562; Hr. THOMSEN, it would seem, was unable to realise this.

results, Hr. THOMSEN makes it appear as if it were he himself who had made the discovery, while as a matter of fact he has contributed absolutely nothing in any way whatever to the attainment of the correct conclusion. And he then goes on to apply his own particular art of critical quotation with the object of extracting the desired result from the actual process. As far as I can see, all that he really succeeds in doing is demonstrating clearly how far his method is removed from true scientific research; he has thus nothing but scorn for the gradual growth of a true solution, which, from its very nature must often follow a sinuous course, feeling its way by arduous work of which no trace appears in the simplicity of the final result. It would seem, however, that there will always be a class of men for whom only authorised and irrevocable opinions exist; who have never themselves experienced the inner metamorphosis of development.

Take another instance. In my book 1909, p. 441—443, after a detailed description of the “wooden hammerlike implement (blubber beater?)” in List I, I added a few lines suggesting that the implement resembled in shape the post at the bottom of the stern of an umiak, *at the same time however, rejecting the possibility* that the specimen in question had any connection with such use. My critic, nevertheless, again finds an opportunity of distorting my meaning by an unfair dislocation of part of the text (p. 414 at bottom of page).

p. 415—416. In 1909, the Commission for Investigations in Greenland presented my collection from Ammassalik to the Ethnographical Department. It was not a large collection, as my instructions for the winter’s stay made no mention of ethnographical studies or collecting work. Nevertheless, this collection does contain certain rare or new items, of which the Museum did not previously possess any specimens from Greenland, such as wooden masks, a mask sewn of sharkskin, a decoy-whistle, a sling, spindle-buzzes, etc.; in a word, objects which warrant the assigning of some relative importance to the whole as compared with the principal collections from Ammassalik, on which I have largely drawn for my material. It is therefore ridiculous to insinuate, as the Museum critic suggests (p. 416), that I have given too much credit to my own collection.

His futile attempt at making me responsible for the contents of the collection is easily disposed of. It is not my fault if the lists of the Department do not now agree with the collection which the Museum at an earlier date received with thanks. The list published by me is independent of that given by the Department, and is naturally correct. Hr. THOMSEN’s suggestion p. 416 (at bottom of page) is altogether worthless.

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#### IV. "Concluding Remarks".

The foregoing will, I trust, have made clear, by a close examination of Hr. THOMSEN's objections, that his criticism is prejudiced and essentially misleading, even though he may be right in regard to certain points. And as to the latter, I can hardly imagine that anyone will be surprised at the occurrence of errors in a work of so great extent, and partly, too, of a pioneering character, the more so since the writer has in various instances lacked the support of loyal assistance on the part of the Museum, where great treasures of ethnographical material have been suffered to repose in the obscurity of the unknown. It will easily be seen that most of the failings in my work could have been avoided if I had been effectively supported by the Museum at the time.

To answer every one of the objections which my critic has scraped together would be as fruitless as it is unnecessary. A criticism based, as this is, upon trifles, and having continual recourse to far-fetched arguments, veiled insinuations, to ways that are dark and tricks that are vain, is hardly calculated to inspire confidence.

The fact of the matter is, that this critical effort as a whole suffers from an inherent structural weakness, being directed towards two distinct ends; the one, under cover of a pretended scientific paper to justify the ways of the Museum to man; the other, to furnish expert information upon ethnographical questions. The quality of the expert information is not improved by this alliance. Hr. THOMSEN does not appear as one scientifically interested in the problems at issue, and has not in any single instance dealt honestly and positively with the subject matter.

p. 417. — It is nothing less than an enormous exaggeration on the part of my critic to assert that he has only touched upon "indisputable errors". Save for his "corrections" of my references to the Museum collections and some few other amendments, he has not succeeded in deciding any point whatever. He has, however, in numerous cases demanded the impossible, the unattainable, by insisting on "definite results" even where the problem was that of some find not hitherto explained, some indefinable peculiarity in an implement, or a doubtful fragment. In such cases, any explanation offered must almost of necessity be "disputable".

The fact of the matter is, that I was the first to furnish accurate descriptions of numerous objects belonging to the material culture of Greenland, which have not previously been described in detail; some of them, moreover, being hardly known at all from the literature published up to that date. Not a few questions remained unsolved; others were answered by a probable hypothesis. In certain instances I have, after years of study and research, involving hesitation and careful con-



sideration, finally arrived at a more correct solution. In my earlier works, I have frequently expressed a provisional opinion with regard to a problem hitherto unsolved, or an ethnographical point not previously described, correcting this in later publications when further study had placed me in a position so to do.

And in three cases at least I have myself corrected erroneous statements in the inventories of the museums<sup>1</sup>.

But this is by no means the first time that Hr. THOMSEN has put forward an accusation against me which recoils upon himself or the Museum. The same may be noted with regard to what Hr. THOMSEN is pleased to call my "peculiar methods" etc. (p. 417). I may here refer to my refutation of his assertions and my exposition of his own peculiar methods of dealing with museum studies (pp. 445 ff, 450 and 470 f.) as also with citations of my books (e. g. pp. 465 and 471) including his regrettable slips or printer's errors (pp. 452—53). I have no need of going farther into Hr. THOMSEN's treatment of his sources; his manner of dealing with one of his sources at any rate, to wit, my books, does not testify to any scientific spirit.

p. 417—422. I have no desire to continue further the unravelling of this serpentine tangle. The pages here cited exhibit the same qualities as the foregoing, overloaded as they are with a tissue of heterogeneous remarks, observations, assertions and objections, unimportant, incorrect and prejudiced, or bearing evident witness to complete misunderstanding; most of them of an extremely petty character, albeit

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<sup>1</sup> I am here referring, in the first place to my having demonstrated that the Eskimo bone tubes designated by the Copenhagen Museum as a kind of children's plaything (*ajagaq*) were in reality old-fashioned needlecases of a type once extensively in use (see my Description of the Amdrup Collection from East Greenland 1909, p. 422 and cf. my article in Baessler-Archiv, vol. II, 1911, p. 41 note 4). In the second place, to my correction of the Pfaff inventory with regard to heads of adzes from North-west Greenland: "three pieces for fastening the axe, two of them with a hole in the middle for insertion of the haft" ("tre stykker til øxens fasthæftning, med et hul i midten for de to stykkers vedkommende til anbringelse af skaftet") the text in inv. Pfaff 27 Pl. I in Stockholm Riksmuseum, Ethnographical Department. This was quoted without amendment in my paper of 1909, p. 526 but corrected in my later work p. 432, note 1, to whaling harpoon heads, this being the real purpose for which the objects (figs. 101—102) were intended. The same correction has later been made by MORTEN PORSILD (Medd. om Grønl. vol. 51, p. 144), doubtless independently of mine. And thirdly, I corrected the Pfaff inventory's "toggle harpoons intended for sealing or salmon-spearing etc" likewise quoted by me without comment in 1909 (l. c. p. 500, ad figs. 79—80) to the true definition: hinged toggles for drag lines; this last correction will be found in my later work p. 433—34. The same correction has been made by MORTEN PORSILD l. c. p. 189—90, independently of mine.

their intrinsic insignificance is intended to be obscured by the prolixity with which they are set forth.

It will here suffice to observe, regarding p. 418<sup>13</sup>, that Hr. THOMSEN's list of so-called corrections consists for the most part of something other than what is generally understood by this favourite term of his, as already indicated in the foregoing (p. 441). Here we find in profusion the supplementary information from the inventory lists of the Museum, which I ought to have received long since.

I do not, however, intend here to go into the question as to whether this or that particular point on which Hr. THOMSEN is pleased to touch has been "disturbed" or "undisturbed by such hindrances as he claims to have met with in the Museum" (the expression used by Hr. THOMSEN p. 418). I prefer to refrain from further discussion, and leave Hr. THOMSEN to his monologue in his own particular wilderness.

## V. The Museum Critic and his Allies.

p. 422 ff. — Hr. THOMSEN has here evidently found an ally in his superior officer — if indeed the case should not rather be stated as the reverse. On this page, and those immediately following, I perceive a reply from the Director of the Ethnographical Department. The hands are the hands of Esau, but the voice is distinctly Jacob's.

But the fact that the Director has thus succeeded in publishing his retort in a paper apparently written by his subordinate, does not render his observations any more correct. I still maintain my standpoint as heretofore, and would merely add, that I am surprised at the importance which the Museum attaches to my brief remarks of 1912<sup>1</sup>.

p. 422—423. — My statement to the effect that only a part of the Greenland collections "are said to have been set up in cases" i. e. exhibited, calls forth a whole page of disclaimer from the Museum official, with two notes and a full page illustration — which last I have not seen up to time of writing. The defence here is the more remarkable from the fact of its commencing, as far as I can make out, with a concession: the Museum authority admits "the exception of supplementary specimens and fragments from the finds made on the sites of Eskimo villages which are placed in the window cupboards" — in other words, it is acknowledged that a part of the material lies in the closed and locked cupboards beneath the windows. The scientist visiting the Museum could not divine the existence of this material, unless informed of it

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<sup>1</sup> This portion of my book was printed in 1912, but the entire work was not published until 1914. — The remarks are cited here p. 438.

by some official of the Department. Only in such case can it be fairly said that these cupboards "are likewise accessible for scientific inspection" (THOMSEN, p. 422, note 2).

It is a notorious fact, that parts of the Greenland collections, including HOLM's from Ammassalik, have been stored away from time to time. With regard to HOLM's collection, this was certainly stored away during the period immediately prior to 1898. I do not know whether this removal is or is not connected with that rearrangement of the Greenland collections which Hr. THOMSEN refers to as having taken place "some ten years back" — if so, the rearrangement must have been a somewhat lengthy process. Considerable portions of the old Greenland collections were not on exhibition during some of the first years of this century, and the visiting scientist could only obtain a sight of individual items on special requisition. Hr. THOMSEN maintains (last part of note 2, p. 422) that when I spoke of HOLM's collection as having "lain in the Museum since 1888" it was my intention to imply that it had been on exhibition since that time. This is simply not correct. Where have I said any such thing? The fact just pointed out shows that a statement to that effect would have been untrue, while on the other hand I am perfectly justified in asserting that the collection has lain or been lodged in the Museum since that date without being continually on view.

I would further add, that Hr. THOMSEN vouchsafes no information whatever in answer to my observations concerning certain stone objects missing from the Holm collection, and not mentioned in the list given (cf. *Medd. om Grøn.* vol. 39, p. 493 and note 1).

With regard to Hr. THOMSEN's footnote p. 423 I would merely point out that a "letter forwarded by the Museum authorities" is not synonymous with an answer, and it was to an answer I referred in my book at the place quoted. There are letters which can be said to contain an answer, and letters which cannot be said to contain any answer at all.

I have thus had good grounds for my assertion above referred to anent the Greenland collections in the Museum. As a matter of fact, however, it was not my intention to imply that any blame should attach to the Museum on this account; naturally I know well enough that museums are often unable, from want of space, to set all their contents on view.

The illustration of the case containing the Ammassalik collection may perhaps be so cleverly contrived as to show the manner in which the exhibits are set up, but it cannot give a correct or an entire idea of the reality. I venture to maintain that a good photograph shows the objects more distinctly than reality, since the picture in a photograph is projected on a plane, whereas the actual perspective renders more distant objects less distinct. In any case, the illustration should

render it easy to appreciate how difficult it would be, especially during the darker season, to get a view of objects placed at the back of the case, which is several metres deep, and with glass doors in which the light is refracted; also, how inaccessible the objects farthest in would be. Only the smaller items were placed on shelves; the larger weapons and dresses had to be removed one by one in order to be photographed, occasioning a great deal of awkward and unpleasant work for such of the Museum staff as were deputed to assist.

p. 424<sup>10ff</sup>. — “a scientifically adequate arrangement of the collections etc.” The view here taken by the Museum is unfortunately erroneous. The arrangement was as a matter of fact anything but scientifically adequate when it came to removing the objects systematically for scientific investigation. The method observed was exactly counter to the principle on which my removal of the objects must reasonably be based, and the difficulty of directing operations was doubled by the fact that I was not permitted to touch the objects before they emerged from the case. The items were by no means so arranged that they could be photographed shelf by shelf as they lay, or in the order in which they were placed against the rear wall or on the floor of the case.

“He was of course at liberty to have the same shelves removed for inspection as often as he might desire”. A public authorisation to this effect from the Director would have been of great value to me if I had received it at the right time, during the course of my studies in the Museum. Now, however, I have no use for it.

p. 425. — I never proposed to employ any other photographer than the one recommended by the Director, as I understood from what was said that it would be convenient to act in accordance with his suggestion. The solemn declaration on p. 425<sup>14</sup> as to my having been “perfectly at liberty to engage another had I pleased” may doubtless be taken for worth as much or as little as the previous suggestions tending in the same direction. By way of guidance here, I may quote the following from Director MÜLLER’s letter to me of 26-2-1910.

[Translation:] “Thanking you for your letter of 24th inst. I am able to inform you that the work of photographing may be commenced when you wish. Details can be arranged hereafter. If you do the photographing yourself, or employ a photographer known to the Museum, nothing more need be said. Should you wish, however, to have a photographer not generally employed in the Museum, I must reserve the right to consider the question”.

We see then, that when the Director reserves the right to consider a question, he afterwards distinctly recollects having given the party concerned full liberty to make his own arrangements. Evidently there must be some special directorial conception as to what constitutes “full liberty”.

This question however, was altogether of minor importance to myself, and I have never expressed any dissatisfaction with the Director's choice of a photographer.

p. 424—425. — The Director is evidently at great pains to show — as he repeatedly attempts to hint throughout these pages — that I enjoyed, as a matter of course, the most complete freedom in his Museum. And here we approach very near to the crucial point.

Trifles, trifles; all these questions as to collections more or less fully on view, their arrangement, the time at which my work was permitted to commence, the choice of a photographer, and so on; things unimportant now as they were then. Whether I was granted scant or abundant time for the work to be done, if the light was good, bad or indifferent; all these are points of subordinate interest, and in part dependent upon personal estimate.

As a matter of course, I submitted punctiliously to all restrictions and regulations which were then in force at this Museum, and to which Hr. THOMSEN frequently refers in his critique. They were neither few nor inconsiderable in comparison with what I have experienced elsewhere; far from it!<sup>1</sup> Even so, however, the regulations, however strict, could hardly render my task altogether impossible. My ethnographical writings show that I did as a matter of fact succeed in getting nearly all the original photographs I wanted of the Greenland collections. What they do not show, is the price I had to pay for the acquisition of them.

If I was forced to desist from my work before it was completed, the reason is entirely independent of these impersonal regulations.

But here we verge upon the heart of the question.

A scientific authority proceeding upon principles calculated to destroy the mutual confidence which should exist between workers in the same field is and must ever be condemnable. —

p. 426. — *Jam res ad triarios venit.* Hr. THOMSEN here seeks refuge in a coalition with the three he mentions.

They must be proud of the alliance.

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<sup>1</sup> In the ethnographical Department of the Copenhagen Museum I had access to the collections only during the winter halfyear, and only three days a week, between 12 and 4. From May throughout the summer nothing was allowed to be removed from the cases, general visiting days being then more numerous than in winter. The objects had to be removed by one of the Museum staff, and the items I wanted had to be requisitioned in writing or pointed out the day before. Only one shelf at a time might be removed, and each day everything had to be put back in exactly the same order before 4 o'clock. etc. etc.

## VI. List of "Corrections".

p. 426—434. — By far the greater number of Hr. THOMSEN's corrections deal with my references to the names of the collections to which the various ethnographical items belong. I had noted every specimen in the large East Greenland case at the Museum which appeared to me typical of the Ammassalik culture as belonging to the "Holm coll." save where I had definite information to the contrary (cf. p. 447 and 450) since it was from HOLM's expedition that we first learned to know the central home of the Ammassalik tribe. In some cases I noted "Holm (?) coll." or "Holm and [or] other collections" etc. the latter where I knew or supposed that the specimens belonged to different collections. — My publication has finally served to elicit fuller information from the Museum inventories, and readers interested in matter of so minute detail — there will hardly be many — may now consult Hr. THOMSEN's "corrections". The importance of these is, however, somewhat diminished by the fact that he has in many instances been unable to identify the objects in question.

A small portion of his corrections refer to my measurements of the specimens, some few others to the material of which the objects are made. We have here one assertion against another. It is but natural, however, that an official having every facility for unlimited study at the Museum would be able to attain a higher degree of accuracy in various points of detail than a visitor less privileged in this respect.

Some few of the corrections serve at best but to furnish supplementary information, without contradicting my description, e. g. p. 423 ad 481 and 489.

Finally, Hr. THOMSEN has here undertaken to correct certain printers' errors, especially the following:

Page in my work (1914)	Error.	Amendment
389 <sub>2</sub>	"... bow ..."	"... board ..."
476 note 6	VII	VIII
738 <sup>25</sup>	8	18
738 <sup>9</sup>	1885?	1885
739 <sup>25</sup>	1789	1689

To the remainder I append the following remarks:

[1] p. 427 ff. in Hr. THOMSEN's "Notes and Corrections" ad p. 389 in my book (1914)].

1) p. 427 ad 389. — "The bird in question is a polar bear". The correction is very typical of Hr. THOMSEN's critical style. The object to which I refer is a claw (the nail itself), but possibly a closer investigation might be desirable, as an observer who is neither Eskimo

nor zoologist may easily confuse both beak and claws of a large bird with the claws of a bearded seal or of a young bear.

2) p. 427 ad 390. — My critic's assertion to the effect that "it is the same object in both cases" is not correct. The object which he notes as Washington Museum No. 160,337 (i. e. No. 160337) has nothing to do with NELSON's Pl. LXXIX fig. 4, but is true of that writer's Pl. LIV fig. 10.

3) p. 427 ad 455. — Here I would first of all call attention to the remarkable admission made by the Museum official: "The remainder" — of the content of my illustration — "is difficult to identify". This indistinguishable remainder is a large double bladder with accessories, belonging to one of the collections in his Department of the Museum. The same difficulty is frequently apparent in the succeeding pages, and would seem to suggest a certain disorder somewhere in that Department.

Such a background is eminently calculated to emphasise the self-sufficiency with which the Museum official presumes elsewhere to judge my illustrations of objects selected by me for photographing in the Museum. In one case, (p. 428 ad 496, see below, under 5) he even ventures to insinuate that the specimen in question is not from the Museum at all, despite my statement that it belongs to one of the collections there; this for the simple reason that he himself is unable to identify it. The same inability to recognise Museum property is exhibited in Hr. THOMSEN's comments p. 428 ad 497, p. 431 ad 584 and p. 432 ad 611 etc.

His confession that he is in all these cases unable to identify Museum specimens certainly lessens our confidence in such identifications as he ventures to pronounce elsewhere. His observation p. 432 ad 645 likewise reveals a high degree of self-confidence, since he is here referring to something which he has not seen; cf. my note *infra*, under (10).

4) p. 428 ad 476. — The stone blades in the knives from Southampton Island are mentioned in my book p. 489 (below), cf. *supra* p. 468.

p. 428 ad 478 1) vide *supra* p. 463—64.

— - — 2) — — p. 462—63.

480 vide *supra* p. 462—63

5) p. 428 ad 496. — "If preserved in the National Museum" etc. Here we have evidently an attempt at suggesting to the reader that I might have smuggled in extraneous material under the name of the Museum. As a matter of fact, I found these stones on one of the shelves in the Museum; where, may be seen from my book p. 493 (lines 4—7 from above). Cf. also HOLM p. 40 (mid).

6) p. 428 ad 497. — I can find neither any correction nor anything new in these observations of the Museum official.

ad 502 whet stone or whetting iron? vide *supra* p. 463.

- 7) p. 429 ad 512 skin creaser or toggle? vide supra p. 463, note 1.  
 — ad 517 vide supra p. 467, with note.

8) p. 430 ad 552. — The "correction" is probably incorrect. A small vessel like this, of the pertaq type, might very well be a drinking cup, cf. my book p. 557, where my knowledge is more particularly based on material from American writers, among them MURDOCH p. 101. HOLM calls the vessel in question a *Bæger*, 'a beaker', 'goblet' (Medd. om Grønl. vol. X, Pl. XXX). It is possibly more luxuriously finished than is generally the case, but intended for scooping up water, or to drink from.

9) p. 432 ad 614. — "and is part of the lock" etc. This is merely a repetition of what I have myself stated in the text (1914, p. 614—615).

p. 432 ad 635 vide supra p. 455.

— - 636 — — p. 464.

10) p. 432 ad 645. — NB. Hr. THOMSEN was on no occasion present during my photographing of the objects in the Museum. And the accuracy of his identifications from my illustrations is, as we have seen under (3), open to doubt.

p. 432 ad 647 vide supra p. 466<sup>13</sup>.

433 - 677 — — p. 468.

— - 678 — — p. 463—64.

— - 681 — — p. 466—67.

— - 682 — — p. 451—56.

11) p. 433 ad 725—28. In these pages of my book I have recapitulated and emphasised what I have called the ethnographical provincialisms of the Ammassalimmiut, as they appeared at the time when the district was discovered, without regard to the genesis of single features. That this was my intention is clearly evident from my discussion of the subject on p. 729, where I particularly presuppose a number of these features to be "old relicts" formerly more widely distributed in Greenland. Wherever I refer to them as "local inventions", I express myself with more reserve, and even add: "A few more of the peculiarities mentioned as only known now from Ammassalik have certainly been used earlier on the other coast". This last point is illustrated by many examples. Among them I have also mentioned the working implements of the men and women (knives, ulos, etc.). The cross-shaped kaiakstand from the northern part of West Greenland I have mentioned not only on p. 387, but also here p. 729. I have noted this form as a provincialism at Ammassalik from the fact of its being still in general use there long after it had been relinquished in West Greenland.

In issuing my summary, I had also particularly aimed at eliciting information as to the corresponding features on the West Coast, and succeeded in so doing far sooner than I had anticipated. Almost immediately, as a matter of fact, the Head of the Danish Arctic Station at



Disko, Hr. MORTEN P. PORSILD, on receiving my work soon after its publication in 1914, directed his attention towards these parallels, and was at once able to publish his observations in a paper then going to print: "*Studies on the Material Culture of the Eskimo in West Greenland*" (Medd. om Grønl. vol. LI, separately printed 1915). His interesting information was inserted in some additional notes towards the end of the paper (q. v. pp. 239 ff., especially pp. 247—48) to which I am happy to refer. — I imagine that Hr. THOMSEN has found the material for some of his more fortunate comments in Hr. PORSILD's valuable work.

12) p. 434 ad 739. My list of works is far from being exhaustive I mention, however, two under RYDER's name. The "*Beretning, etc.*" added by Hr. THOMSEN I have also referred to twice in my text (1914 p. 382 note, and 645 note) and in the usual manner, stating name of author and date of publication.

I am happy to take this opportunity of referring also to the rich bibliography of Greenland ethnography etc. given by H. P. STEENSBY in his recent work on the Origin of Eskimo Culture (Medd. om Grønl. vol. 53, 1916, pp. 219—228) as also to the lists in C. M. FÜRST and F. C. C. HANSEN's monumental *Crania Groenlandica*, Copenhagen 1915.

p. 434 ad 743—53 vide supra p. 469—71.

— - 739. As to SCHACHT, vide supra p. 454—56 and p. 478.

I am at a loss to understand what Hr. THOMSEN may have meant by suggesting (line 7) that "the rest may be dispensed with".

We have now learned, however, that a considerable portion of Hr. THOMSEN's work might well have been "dispensed with".

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